INDUSTRIAL MEDICINE AND SURGERY

INDUSTRIAL MEDICINE

The International Journal of Medicine in Industry

This Journal is dedicated to the advancement of sound industrial medicine, including the surgery of industrial trauma. To that end its varying contents will embrace scientific papers, reports, digests, news items and official statements, together with editorial comment. The editorial policy is to avoid undue censorship. Some contributions ably prepared will be published although contravening the personal opinions of the editors. Care will be exercised in checking the accuracy of known facts, as printed, but in all other respects statements and opinions are those of the author and may not be shared by the editors. On any article, the editors reserve the right to comment favorably or otherwise, in the current or any subsequent issue. On this basis, contributions are invited. The opinions expressed in any contributions, including the editorials of this Journal, do not necessarily reflect the attitude or opinions of any associated organization.

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INDUSTRIAL MEDICINE AND SURGERY
MARCH, 1958

Medical Department Layout and Design

Section III — Reconstruction of the Proposed Plan

WILLIAM J. FULTON, M.D.
Detroit, Michigan

THE REVISED plan is primarily concerned with functional FLOOR LAYOUT. Details of over-all construction will not be attempted, nor will equipment, furnishings, and supplies be specified. There is no dearth of information concerning medical equipment. Special items, such as intercommunication and signaling systems, record transcribers, space-saving cabinets, laboratory benches, and so on, are readily available.

Detailed dimensions of individual rooms or spaces will seldom appear. Every plan presented was originally drawn to exact scale — and the *inside* dimensions of each total plan are given. By photostat or other process, any of these plans can be enlarged to a desired scale. Applying a scale-rule to the enlargement will yield detailed dimensions that, for all practical purposes, are accurate.

Many ideas, suggestions, and observations gleaned during the years of association with those engaged in the practice and administration of industrial medicine will be made use of throughout this section. From time to time, it will be necessary to describe in some detail certain features, procedures, and techniques. Just as we paused to discuss the quit rate in the preceding section, we will likewise digress to present items that are particularly pertinent to the administration of medical services.

The revised plan will be presented and discussed in the same manner and sequence that were used in our edit of the proposed plan. It will first be presented in its entirety and subjected to observations of a general nature, followed by a demonstration of traffic control. Each of the three groups of facilities will then be discussed separately, and then combined and coordinated.

The revised plan is presented in Fig. 8. The same dimensions and area have been retained, namely, 75 ft. x 65 ft.

We will first point out some changes of a general nature in the REVISED plan as compared to the PROPOSED plan.

CORRIDORS AND WALKWAYS: The following figures represent the dimensions and areas occupied by corridors and walkways in the proposed and in the revised plans.

The figures speak for themselves. While conserving 26½ square feet of space, the *revised*

PROPOSED PLAN			REVISED PLAN		
Wide	Long	Sq. Feet	Wide	Long	Sq. Feet
6′-0″	113′	678.0	5′-0″	23′	115.0
4′-6″	19′	85.5			
4′-0″	19′	76.0	4′-0″	158′	632.0
4′-0″	6′	24.0	3′-0″	30′	90.0
Total	157′	863.5	Total	211′	837.0

SQUARE FEET		LINEAR FEET	
Proposed Plan	863.5	Revised Plan	211′
Revised Plan	837.0	Proposed Plan	157′
	26.5		54′
	3.0%		34.3%

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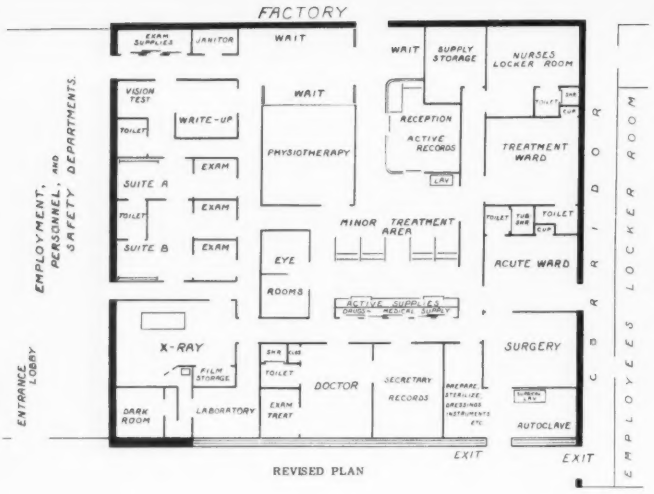

Fig. 8.

plan gains an additional 54 linear feet of corridor. The corridor that is *five* feet wide passes from the factory entrance into the Minor Treatment Area. The longest of the two corridors that are *three* feet wide is in the left lower corner and passes between the X-Ray Room and Examination Suite B. The shorter one is between the Write-up Room and Suite A. All other corridors have a clear width of *four* feet. Approaches to and openings into corridors have been placed with due consideration to the possibility that stretchers may be carried or stretcher-carts wheeled through every portion of this layout. One might get the impression that 211 feet is "a lot of corridor." As we progress, however, it will be evident that every passageway has been designed and placed to serve specific purposes and functions.

No longer will it be convenient, necessary or even possible to use the X-Ray Room, or any other room, *as a thoroughfare.*

The eight doorways into the Medical Department, noted in the proposed plan, have been reduced to FOUR. In the proposed plan, there was no door that opened directly to the outside. In the right lower corner of the revised plan, an exit has been provided to serve two purposes:

1. *Ambulance Exit* — Avoids the necessity of transportation through factory or public corridors.

2. *Emergency Exit* — Direct evacuation of patients in case of fire or explosion.

This door is securely locked on the outside, but has a "panic bar" on the inside.

Attention was called to the smallness of the *dressing rooms* in the proposed plan. It was observed that they were "too small to serve any other useful purpose." These six rooms confined 110 square feet of working area to *one* purpose. No such small single purpose rooms appear in the revised plan; 110 square feet are thus conserved for broader usage.

We have previously called attention to the possibility that "*one person* may serve as both X-Ray and Laboratory technician. For this reason, it will prove an advantage to place the Laboratory adjacent to the X-Ray room." In the revised plan the Laboratory adjoins the X-Ray room. To expedite to and from service by one technician, an opening between these two rooms is provided. This opening from X-Ray into Laboratory is placed in the approach to the Darkroom light maze.

The NURSES' ROOM is situated in the upper right corner, "a location remote from treatment activities."

In the lower right corner, a room has been provided "for autoclave and sterilizer, in which dressings, instruments, and certain other surgical supplies can be prepared, sterilized and stored." This provision enables us to relocate the room labeled Drugs-Storage-Supplies that was in the proposed plan. A room for storage of reserve or inactive supplies has been placed by the Nurses' Room.

As a final general observation, attention is called to provision of toilet and bathing facilities in the doctor's quarters and in the nurses' quarters.

Our next point for consideration has to do with "the source, motion, flow, and control of the total patient traffic."

The source and volume of the total patient traffic have already been determined.

During the first six months, the daily number of Pre-employment examinations entering from the Employment Department will vary from 41 or more to 28, as indicated in Table XII.

When hiring is completed, 366 cases of all types will enter our hospital per day, as indicated in Table XIII. Of these, 342 will enter from the factory, four will be carried through the emergency entrance, and 20 will come from the Employment Department. According to Table XIV, this is a rate of one visit every minute and 28 seconds. When planning a medical layout, consideration of ways and means for controlling, directing and distributing the incoming flow of patients is a good starting point. To meet the traffic problem, we begin by devising a layout which establishes what we term ONE-POINT CONTROL. The architecture involved in establishing this function is shown in Fig. 9.

Only that architecture which has a direct

bearing upon the specific function under discussion is shown in Fig. 9. Elimination of architecture that is not specifically involved prevents ocular diversion to other portions of the plan, and confines mental concentration to one function at a time. This technique of functional presentation will be repeated in those subsequent layouts that have to do with *single* functions.

Ninety-nine per cent of all visitors who enter this department must follow one of the two pathways indicated by the blue arrows. Whether they come from the factory or from the Employment Department, in order to gain entrance to the Treatment or Examination facilities, every one must pass the RECEPTION CONTROL POINT. Note the three closed doors along the lower side of the pathway from the Employment Department. Each of these doors can be secured from within by a bolt latch. It is an advantage to affix conspicuous "PRIVATE" signs on doorways situated along pathways such as this.

In the lower left wall there is another closed doorway that opens *into* the Employment Department. This door cannot be opened from the outside, and is controlled within the Medical Department by a latch operated by hand or by electricity. This door is placed here for two specific purposes, which will be discussed later.

Any person who reaches the Reception Control Point can be plainly seen from R.N., the center of nursing activity. This is the location where a nurse is most likely to be at all times and under all circumstances. It is called the R.N.-Control Point.

EMERGENCY CASES: Cases requiring transportation are carried down the corridor on the right side and will enter through the doorway into the acute ward. Occasionally, the Medical Department receives advance notice that "a stretcher case is on its way!" However, there will be times when unheralded emergency cases reach the emergency entrance. To meet all contingencies, a button ("S"), placed on the corridor side, will activate a signal within the hospital. Such a signal can be clearly seen or heard from both the Reception and the R.N.-Control Points. The emergency entrance is fitted with an elevator-type sliding door. It can be opened manually from the acute ward side, or electrically from either of the two points marked with a yellow triangle containing a "C." In the interest of safety, this door can be closed *only by hand.*

Instruments necessary to receive, send, and distribute phone calls and intradepartmental communications are located at the Reception Control Point and *duplicated* at the R.N.-Control Point. Throwover switches can transfer the exclusive operation of the instruments to either of the two locations.

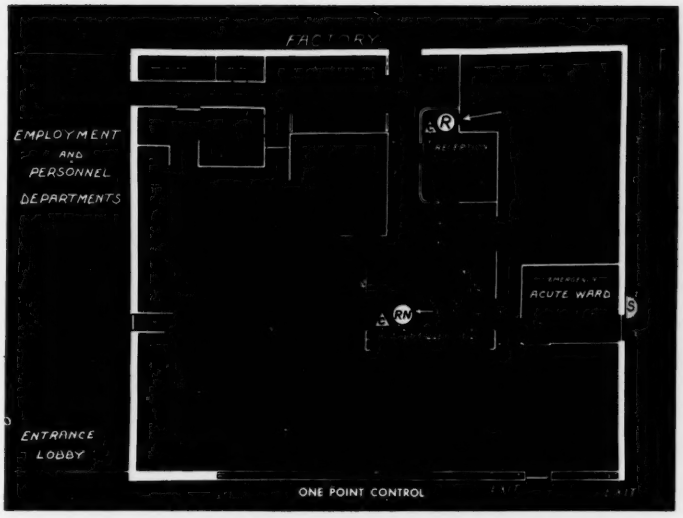

Fig. 9.

Demonstration of architecture designed specifically to handle patient traffic and establish one-point control is now complete. One-point control is an obvious advantage when the Department is working under pressure and all functions are in operation. Establishing a secondary control point at R.N. is equally important, and meets the questions that pertained to the adaptability of facilities to the circumstances of (1) Reduction in Force, and (2) Night shift. In the absence of a receptionist, one nurse can control the entire department from point R.N. On third shift, the examination facilities are usually locked out. Having all cases enter at one point enhances the ease with which a lone third-shift nurse can control the facilities, and adds much to her efficiency, comfort and safety.

Finally, two criticisms leveled at the proposed plan in the preceding section are put to rights, namely:

1. There is no longer "an architectural invitation to the rank and file to make a thoroughfare of the hospital."

2. Treatment facilities are now "*in*conveniently accessible to nonpatients in general."

Fig. 10 is a sketch of what greets the eye on entering the Department from the factory and approaching the Reception Control Point. Visitors from the Employment Department approach the receptionist through the larger waiting room to the right. Seen in the background are three of the four Minor Treatment booths. All three nurses enjoy a commanding view of the main entrance into the Treatment Facilities.

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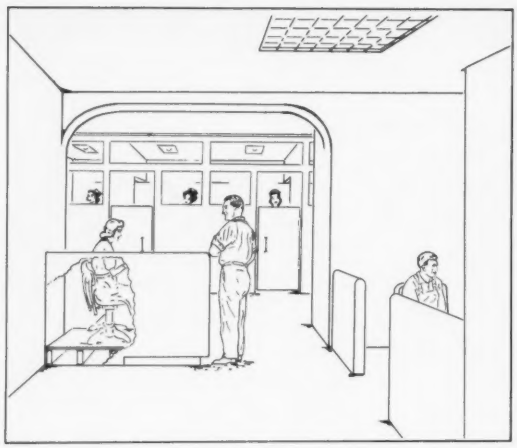

Fig. 10.

The nurse furthest to the right is stationed at the R.N.-Control Point. In the absence of a receptionist, a lone nurse can pretty well control the entire Department from this location. The proper placement of angle-vision mirrors in relation to the position of this nurse will enable her to see around the corner into the waiting room on the right, and down the corridor to the entrance from the Employment Department.

In order to see the cut-out portion of the reception booth, the seats in the smaller waiting room on the left were not sketched. The purpose of the cut-out is to suggest that a raised platform and a comfortable posture chair might improve the working conditions of a receptionist. The higher the receptionist's head, the less will she have to "crane her neck" when talking to people who are standing up. Cricks in the neck and undue fatigue are frequent results of this exercise. Why not use a high stool at floor level? Considering the variety of activities that go on at this post, an eight-hour stint on a bar stool would be anything but conducive to optimum efficiency. As a sound investment, we prefer the raised platform and a standard-height posture chair.

The question of the height of a platform above floor level recalls an interesting incident. The Manager and the Personnel Director of a large industrial plant under construction in one of the southwestern states were reviewing the medical layout plans with me. The Manager raised the question of the platform height. I told him that "*10 inches above floor level*" was generally satisfactory. He cocked an eye-brow and instructed the Personnel Director to "*lower* your platform an inch and a half," observing that "the doctor has failed to take into account the average height of the lovely females in the Magnificent Empire of Texas!"

A raised platform poses a SAFETY PROBLEM that should be considered. Choice of guard rail, gate, ramp, or other measures to lessen chances of a trip or a fall are matters of local expediency and resourcefulness.

It had never occurred to me that the *height of the desk barrier* was especially important until it was brought to my attention rather explosively some years ago. The receptionist bounced through my door, complaining that there were too many Davy Crocketts in the waiting room and she was unable to concentrate on her clerical work. "Doctor, they sit there and stare and stare at me, just like I was a bear; I can't take it any more. You will have to do something about it!" It makes little difference whether Davy stared or grinned his grizzlies into a state of hysteria, the receptionist had a point. Though she was easy to stare at, her situation was nevertheless disconcerting. So a desk with a sufficiently high barrier was provided. This solved the problem. If the Davy Crockett syndrome peculiar to receptionists is worth preventing, the following idea should be passed along. THE HEIGHT OF THE BARRIER SHOULD EXCLUDE FROM THE RECEPTIONIST'S VIEW THE ANATOMY BELOW THE TIP OF THE NOSE OF PERSONS SEATED IN THE WAITING ROOM. This is a reciprocal arrangement despite the differences in the heights of people. A deal of obvious rising up and neck craning on the part of the vast majority would be necessary to bring about a troublesome "staring" situation. (At this point in the discussion, the southwestern Plant Manager instructed the Personnel Director to "*raise* your barrier an inch and a half on account of those Texas longhorns."

We suggest that the medical receptionist be in uniform. A white uniform lends professional atmosphere at the door and makes a wholesome psychological impression on all visitors. The photograph of Miss Crockett made shortly after her problem was solved (Fig. 11) gives an idea of the appearance of a receptionist in a white

Fig. 11.

uniform seated at a desk provided with a barrier of adequate height.

The two waiting rooms shown in Fig. 9 are grouped at one location. The receptionist has an unobstructed view of both. The sketch makes it evident that no person sitting in either room can see into the Treatment area. With a minimum of effort this arrangement should effectively shield candidates for employment from some of the unwelcome first impressions quoted from Dr. Wishard's article in our introduction. In industry, new injuries, even those of the most trivial blood-letting type, seldom wait. They proceed straightway into the Treatment area from the entrance. At best, persons in the waiting rooms would catch but a fleeting glimpse of them. There should be very few instances of employees waiting to have wounds dressed, especially in adequately manned and efficiently administered departments. The smaller room to your left as you enter would be used for these occasional redressing cases. It is screened from view of those in the larger waiting room by the two opaque railings shown on the right.

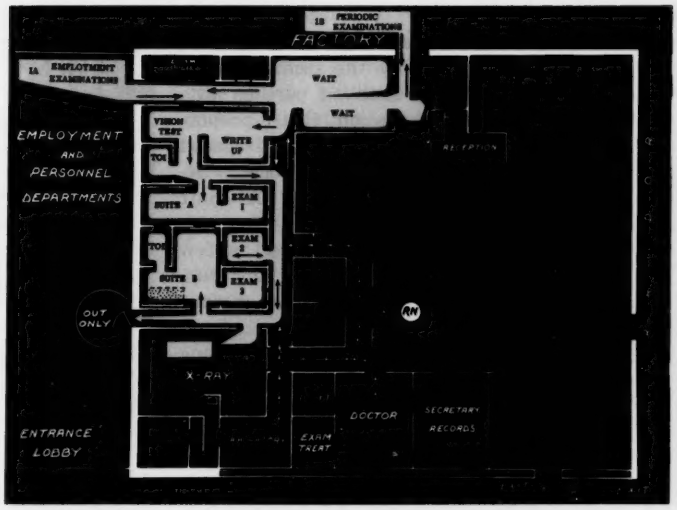

Fig. 12.

WE ARE NOW ready to "divide the total job into the three chief functional components . . . . and to consider each one as a separate group of facilities" (See Fig. 1). First to be considered will be the

EXAMINATION FACILITIES:

In Fig. 12 YELLOW represents the pathways and areas used by persons undergoing PRE-EMPLOYMENT (1-A) and PERIODIC (1-B) Examinations.

We have discussed the waiting room, and the entrance pathways do not need verbal description.

The lines of *white arrows* indicate two features that should be called to attention at this point.

1. The X-ray, Laboratory, and doctor are conveniently accessible to the examination area.

2. "R.N.," the center of nursing activity, has a choice of two short routes to the X-Ray and Laboratory or to the center of the yellow Examination area. (This is especially important when a nurse is called on only occasionally to take part in the Examination Functions.

Note particularly that the white arrow pathways do not pass through active areas. Functional corridors have been provided for this specific purpose.

While the whole plan is in view, and before engaging in more detail, it would be well to describe the procedures that will take place in these facilities when there is a demand for LARGE NUMBERS OF PRE-EMPLOYMENT EXAMINATIONS.

The layout contains FIVE JOB-STATIONS; namely, the WRITE-UP, VISION TEST, and THREE EXAMINATION ROOMS. The design permits procedures to take place simultaneously at all five stations. Each of the five procedures requires a minimum time of from FIVE to SEVEN MINUTES. All five procedures or phases are experienced by individuals undergoing this Examination. To help us visualize the total activities, we will describe in its order of sequence the phase of the Examination process that is taking place in each of the five stations.

PHASE I: Station — WRITE UP:

Clerical operation. The candidate has been called from the waiting room. The forms that will accompany the candidate are typed here. There will be a number of them, such as the permanent physical examination record, vision test, blanks for urine and blood specimens, x-ray, and the form for transmittal of medical placement data to the Personnel Department. In discussing the time spent in those facilities, it was pointed out that the allotted time would only "allow a questionnaire history." This layout is planned on the assumption that the medical history is obtained by means of a questionnaire filled out by the candidate or his interpreter. (Medical histories obtained verbally and transcribed will require much more time, if they are to be of any real value. In this project, the verbal method would require thrice the time and twice this write-up area in order to keep pace with the time rhythm of the remaining four phases of the examination procedure.)

PHASE II: Station — VISION TEST:

During this phase, the candidate is subjected to a rather thorough test of his eyesight. One

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of the approved instruments designed for this purpose is used. Results of the test are entered on the candidate's record by the technician. It takes longer to complete tests on persons who wear glasses. Depending upon their proportionate numbers and the way they are spaced among the arrivals, time-lags will occur between this and the write-up phase. A chair should be provided in the write-up space for the occasional candidate who must wait a few minutes for his vision test. In the long run, the time required for vision tests will average about even with that required for all other phases.

PHASE III: Station — EXAMINATION 1, SUITE A:

When the vision test is completed, a member of the medical staff will usher the candidate into Suite A. Here he or she will be weighed and measured. Urine specimen will be obtained. Note that there are two toilets accessible to Suite A. Candidate and attendant then enter Examination 1 and the opening into the suite is closed. Instructions are given as to disrobing and gowning, and the candidate is told that "the X-Ray technician will be here in a few minutes." (A handy magazine is a good medium for relaxation during even short waiting periods.) As the attendant leaves the Examination room through the door opening into the corridor on the right, the switch is tripped that SIGNALS* the Laboratory and X-Ray that *"a* MAN *or a* WOMAN *is ready for your services in* Examination 1." Having made all the necessary entries, the attendant places the completed record in a receptacle on the corridor wall at the side of this door. The door is closed and *latched by hand.*

PHASE IV: Station — EXAMINATION 2, SUITE B:

In response to the signal, the X-Ray or Laboratory technician goes to Examination 2 by way of the corridor, removes the record from the receptacle in the hall, opens the door, and greets the candidate by name.

Blood may be drawn for serology in the Examination room before or after the chest X-Ray. The candidate is escorted to and from the X-Ray room through the corridor. Attention is called to the fact that all three of these Examination rooms open on a corridor that is PRIVATE. There is a door at either end and one in the central pathway from "R N." This latter door is set back in the passage to allow maximum clearance at the corners in case of a possible stretcher turn.

After X-Ray the candidate is accompanied back into Examination 2. The technician passes the record through a slot into a receptacle that is beneath it on the wall within Suite B. A switch near this slot is then turned on, signaling that the candidate in Examination 2 has completed the fourth phase of the Examination and is now ready for the doctor. The urine specimen is picked up, the X-Ray signal turned off, and exit made through the corridor door which is closed and latched. Throughout this phase the folding door into Suite B remains closed.

PHASE V: Station — EXAMINATION 3, SUITE B:

The doctor has entered Suite B, removed the record from the receptacle and briefly reviewed it. He then pushes the folding door open and introduces himself to the candidate. Should the candidate be FEMALE, a nurse will be present and will make the introduction. The folding door remains open during the doctor's Examination.

When the Examination is finished the doctor fills out the "placement data form" and gives it to the candidate to take to the Employment Department. He then tells the candidate he may dress and leave by the corridor door, instructing him to "turn to your right and *follow the signs* to the Employment Department; close the corridor door when you leave but *do* NOT *latch it.*"

The doctor then turns off all signals and steps into Suite B, closing the folding door behind him. Here it will take him several minutes to make notations and sign permanent Examination record.

By this time the candidate in Examination 1 will have completed the fourth phase of the Examination and will be ready for the doctor. As the candidate whose Examination has just been completed opens the door to leave Examination 3, a switch will be automatically tripped signaling that room No. 3 is now vacant and ready for the next candidate.

This completes the description of the Preemployment five-phase Examination cycle which will be continuously repeated in these facilities.

COMMENTS on the various features of this examination layout are now in order:

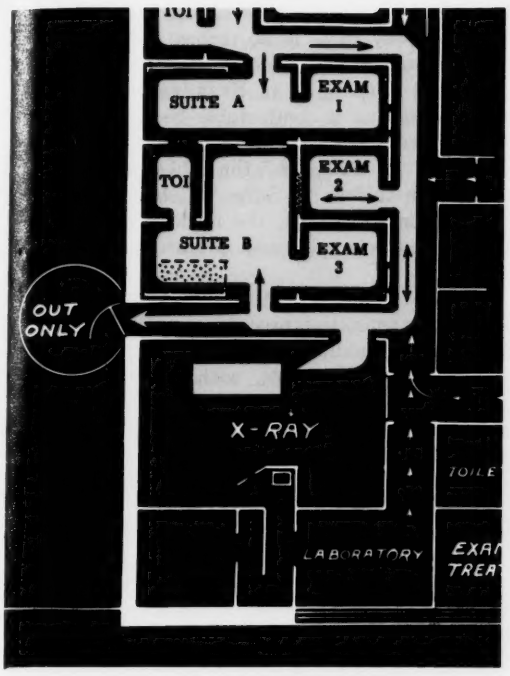
1. Only ONE DISROBING OPERATION is necessary.

2. The dual entrances into the three Examination rooms from the suites and corridor create unusual numbers of approaches into and out of these facilities. This multiple accessibility combines to shorten and lessen for the staff members a tremendous number of "walk around into and out of" distances and steps.

3. Access to the Examination rooms from a private corridor permits staff members to carry on procedures in these rooms without interrupting or infringing upon what is taking place in the Examination suites.

4. On reviewing the phases, especially the last three, it is evident that absolute INDIVIDUAL PRIVACY can be attained. There is a remote possibility that an employee leaving the facilities may

*The detailed description of a signal system for the examination facilities will appear at the end of this section.



Portion of Fig. 12.

pass a patient in the private corridor. Remember, however, that the distances to be traveled are quite short and that persons undergoing Examination are gowned and *always* accompanied by some member of the medical staff.

5. Because of the degree of individual privacy attainable, separate facilities for MEN and WOMEN are unnecessary.

6. The door marked "OUT ONLY" is placed here to be a convenience when the Pre-employment Examination schedule is heavy. On completion of their Examinations, candidates can return directly to the Employment Department by this route, without moving against the flow of incoming examinees.

When candidates are called from the waiting room for Examination, have them bring their wraps along. This practice will prevent the necessity of making return trips to the waiting room. Clothing hooks and parcel shelves are provided in the Examination rooms.

7. A team composed of a physician, two nurses, an X-Ray or Laboratory technician, and one clerk, working *uninterruptedly* in these facilities, can turn out Examinations at the rate of 10 an hour (80 a day). A candidate will remain in these facilities approximately 35 minutes. As outlined, the Examination is not especially elaborate; however, considering the environment, the number of staff personnel that the candidate sees, and the short periods he will wait unattended, a very good *first* impression of the employer's Medical Department should result.

It is obvious that the doctor will not possess the *final* reports on X-Ray and Laboratory procedures in so short a time. Whether the candidate will be put to work subject to further reports or whether employment will be deferred until all reports are complete, are matters of local employment policy.

IT IS HARDLY necessary to describe the great variety of procedures involved in performing PERIODIC, OCCUPATIONAL AND HEALTH MAINTENANCE EXAMINATION (Function 1-B). The same facilities will be used and the same degree of individual privacy will be enjoyed. The chief difference is that these employees come from the factory and return to it through the waiting room.

This layout is designed to permit expansion. A few alterations can increase the capacity to turn out more Examinations and allow additional procedures to be included in the routine Pre-employment Examination. The alterations need not disturb in any way the boundaries of the facilities as they appear in Fig. 12. Fig. 12-A is an example of a layout derived from alterations within those boundaries.

There are several minor changes that need not be described in detail. Suite "B" remains unchanged, the only alteration being the elimination of the door into the toilet that formerly opened from Suite "A."

The chief alteration is the elimination of the corridor below the write-up room and extension of the upper toilet wall across the entire width of the facility. The area of the former write-up space is thereby reduced by 30 square feet.

We now have two identical Examination suites, that are separated by the same partition. An additional room, "Examination X" has been gained.

The positions of the write-up and vision test have been interchanged. As indicated by the arrows, Phase I (write-up) now begins on the left and proceeds toward the right to Phase II (vision test). The arrows indicate two optional routes from the vision test to Phase III that will take place in any of the four Examination rooms.

The addition of Examination X will increase the number of examinations per day by 16, or 20%. During the five-phase examination, three Examination rooms will be continuously occupied Since a fair proportion of people are relatively slow dressers, there will be delays in clearing the Phase V room to receive the next candidate. A *fourth* Examination room will absorb the time lost by these multiple delays, smooth the flow, and increase the number of Examinations that can be performed.

More elaborate Examination procedures may be desired or indicated. Adoption of routine

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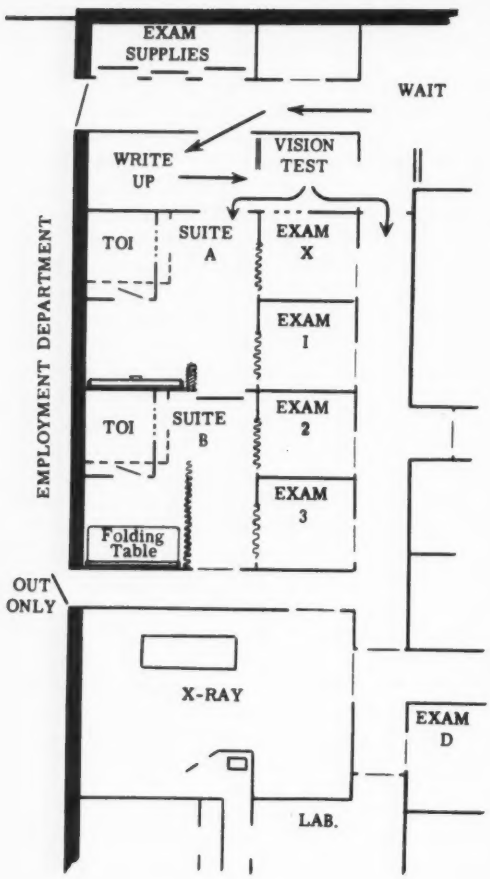

Fig. 12-A.

AUDIOMETRY is consistently increasing. ELECTROCARDIOGRAPHY has become routine in certain age groups. When planning Examination facilities, such possibilities should be considered.

If AUDIOMETRY were adopted as routine in our project, Examination X is in the position of normal procedure sequence. It can be soundproofed and an opening made into it from the vision test as indicated by the dotted portion of the wall line. Audiometry would then become the third phase of what now would be a SIX-phase Pre-employment Examination.

Two optional positions of the toilets are shown. Which one you choose depends upon how you intend to utilize your available floor and wall space. The original position allows more floor and wall space opposite Examination X and Examination 2. The position indicated by the superimposed dotted outline will allow more floor and wall space opposite the foldaway tables. The location of a door or doors into the toilets is optional.

Each suite contains a foldaway table and a sliding partition. (The partitions were not shown in Fig. 12 because of the use of color. The foldaway table is 30 inches wide, equipped with a rubber foam mattress, and serves the three-fold purpose of an Examination or Treatment table and a comfortable bed. The top of the mattress is approximately 34 inches above the floor. In Suite "A" the table and partition are shown folded; in Suite "B" both are pulled out. When pulled out, the modern folding partition creates a virtually private room within the suite.

Hence, the layout will accommodate additional *routine* Examination procedures or allow the performance of additional procedures that may be indicated. For example, within these facilities the following procedures can be performed simultaneously without violating individual privacy, regardless of sex:

1. ALL FIVE PHASES as originally outlined.
2. Audiometry in Examination X.
3. Basal Metabolism — Suite "A" in folding partition room.
4. Electrocardiograph — Suite "B" in folding partition room.

Note "Examination D" in the right lower corner near the Laboratory and X-Ray. It can be put to the same uses as the Examination rooms that open into the suites. Examination D will be referred to more specifically when we discuss Function 1-C — Special Consultations.

There is a school which stresses layouts that require the patients to do most, if not all, of the walking. A typical layout that "brings the patients to you" consists of small dressing rooms that on one side open directly into the X-Ray and on the other side open into the doctor's Examining suite. Unquestionably, such a setup will save doctor and staff considerable steps. In a factory large enough to afford the space, confine uses of an X-Ray room exclusively to Examination functions, and engage a physician to do nothing but examine, such an arrangement is entirely feasible. Under these circumstances the waiting periods of patients should be reasonably short.

The X-Ray in our project serves *all functions*. Consequently, any "assembly-line-examination technique" would suffer constant interruption. Other needs for X-Ray, including emergencies, will trap candidates in the dressing rooms. Saving time and steps is important, but of equal importance is consideration for the comfort and feelings of your patient. Long waits in claustrophobic cubby holes are not conducive to the creation of good "first impressions." We feel that the expenditure of a little extra time and a few extra steps in the interests of good personnel relations is a sound investment. Therefore, this layout represents a middle ground approach, paying equal deference to both patient and medical staff. The *maximum* travelling dis-

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tance will be between the LABORATORY and Examination X. Should a technician be required to make this trip 80 times in an eight-hour day (a most unlikely necessity) a total distance of 3,736 feet would be covered; approximately seven-tenths of a mile.

In summary, we have applied to this Examination layout the Cardinal Points pertaining to Quality, Quantity and Working Environment that have been set forth. Also, the content of points "a" and "b" in Section I. The following principles are emphasized.

1. Versatile flexibility.
2. Individual privacy and comfort.
3. Maximum usage of available space (without undue cramping).

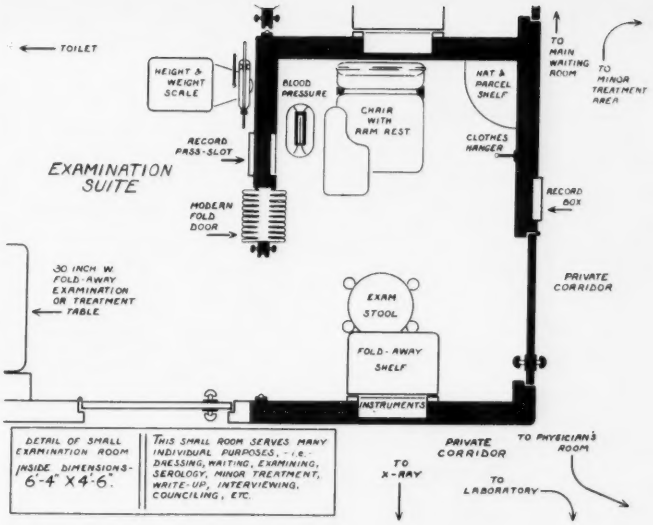

Fig. 13.

The principle of "maximum usage of available space" is best illustrated by a more detailed description of the dimensions, uses, and features of one of the small Examination rooms. A detailed drawing of Examination 3, showing its relationship to the immediate surroundings, is presented in Fig. 13.

There are 28 square feet of floor space *within* this room ("*In*side dimensions" is used literally). Some of the many purposes for which the room was designed are listed beneath the drawing. The words printed on the drawing are ample to indicate the nature of the immediate surroundings and the contents of room and Examination suite.

The wall opening into the Examination room from the suite is four feet wide. When pushed open the modern fold door will still occupy 14 of these 48 inches, leaving 34 inches clear-way. This detail is included to recall the "possibility that stretchers may be carried or stretcher-carts wheeled *through* every portion of this layout." To have *all* openings too large will prove a happier circumstance than to have *any* too small.

The 14 in. by 20 in. FOLD-AWAY writing SHELF is mounted on folding brackets and can be pushed downward flush against the wall.

On the wall of the private corridor to the right is the RECORD BOX. The purpose of this receptacle was described in the outline of PHASE III. The RECORD PASS-SLOT is on the opposite wall. Its uses were described in the outline of PHASES IV and V. The slot in the exam room is at least 60 inches above the floor. A chute beneath it slants downward into the record box that is on the wall in the Examination suite. Once it has been dropped into the slot, a record CAN NOT BE RETRIEVED FROM THE EXAMINATION ROOM SIDE. It is not wise to allow promiscuous inspection of records by new or old patients. Recounting innumerable sad experiences that prove this to be an indiscreet practice is unnecessary. Using such a record pass-slot may help prevent the formation of imprudent habits in handling records. Why go to all this trouble? Why not open the folding door and place the record in the Examination suite? These are reasonable questions. A pass-slot *is* unnecessary in a layout that does not permit simultaneous procedures in Suite and Examination rooms. However, in this layout, one of a number of procedures may always be taking place in the Examination suite. Since the modern fold door remains closed, the pass-slot is an advantage.

INSTRUMENTS: The Examination rooms are individually equipped with a blood pressure apparatus and those examining instruments that are most commonly used; namely, stethoscope, tongue depressors, a battery handle for ear, nose, and throat inspection, and a reflex hammer. It will prove profitable to duplicate this equipment in *each* of the Examination rooms. An amazing amount of time, motion, and energy can be wasted in hunting for needed instruments, and in carrying needed equipment from place to place.

The door opening into the private corridor has three special features:

1. The knobs operate a single mortise *bolt* from either side. There is no *spring* latch. The door must be deliberately shut, held to, and bolted by hand.

2. An automatic push button electric switch is mounted in the edge of the door frame. When the button is pushed in, the signal light is turned on, indicating that the room is occupied.

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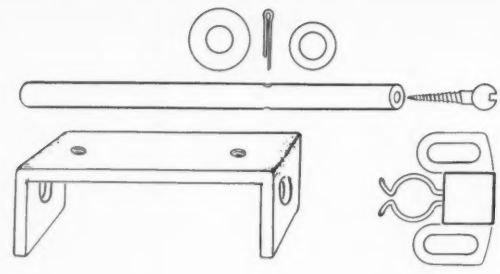
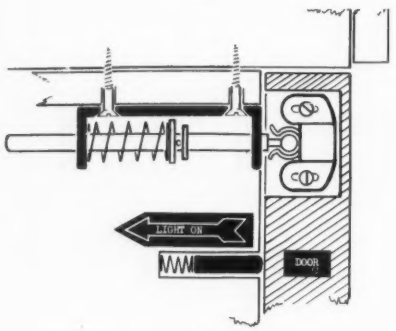
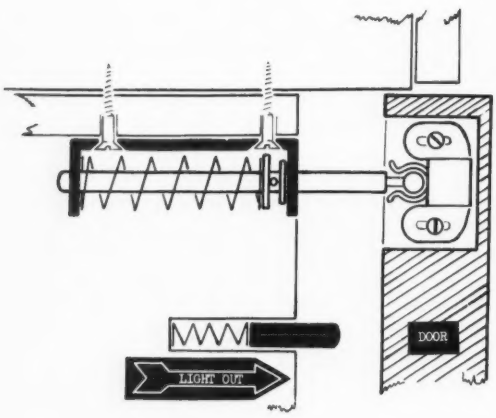


A.



B.



C.

Fig. 14.

So long as the door remains bolted, the light will stay ON. When the door is unbolted, the button springs outward, turning the light OFF.

3. Mounted on the front edge, at the top of the door, there is a device which will hold the unbolted door in a stationary position that is open just enough to allow the automatic switch to remain OFF.

There are a number of ways to attain the objective of this third feature. We have sketched a simple do-it-yourself affair (Fig. 14), utilizing one of the cupboard door catches that can be bought in any hardware store. The needed materials are shown in sketch A. There are six items.

1. The cupboard door catch that is supplied with the spherical-headed screw.

2. A rod 4½ inches long — either 5/16 in metal or ⅜ in. wooden dowel. Dowels have proved satisfactory. A hole is drilled into the end of the rod to receive the spherical-headed screw (screwed into wood — sweated into metal).

3. Two washers, to fit over the rod.

4. A cotter pin.

5. A 5-in. length of strap metal, ⅛ in. thick and 1 in. wide. One full inch at either end of the strap is bent at right angles. A hole of sufficient size to allow free sliding of the rod is drilled through the center of these ends. Holes for wood screws are drilled in the long surface.

6. Expansion spring (not shown) with enough thrust to shove the spherical head of the screw into the jaws of the cupboard catch.

In "B," the gadget is shown completely assembled and installed. The Examination room door is held shut by the mortise door bolt. In this position, the automatic switch is depressed and the signal light stays turned ON.

In "C," the door has been shut, but the mortise bolt has *not* been turned. In the description of PHASE V, the doctor instructed the candidate to "close the door when you leave, but do NOT latch it." The expansion spring has thrust the door outward. The grip of the door catch jaws on the spherical rod-head holds the door stationary. In this position, the automatic switch springs out to its full limit and the signal light stays OFF. The distance the door is thrust outward depends upon the position of the cotter-pin hole in the rod. In this sketch, the door is out one inch from the frame butt, which is a maximum. The cotter-pin hole should be drilled so as to limit the outward thrust of the door to *no more* than one quarter of an inch *beyond* the protruding tip of the automatic switch button. Note that even at the maximum distance, the door is virtually closed.

The jaws of this small door-catch grip with a surprisingly tenacious firmness. It takes a relatively strong pull to disengage the rod. Strong blasts of air fail to push the doors into the corridor.

There is, of course, a master switch to shut off all signal lights during times when these facilities are not functioning. Without such a switch, there would be an interminable twinkling of lights all over the place during cleaning or other maintenance procedures.

DIRECTION SIGNS: When the Pre-employment Examination is completed, the candidate is instructed to "follow the signs to the Employment Department." Here is the place to emphasize the importance of installing adequate and prominently visible signs throughout the entire Department. This is of particular importance in Examination facilities, where layouts are most apt to seem maze-like to occasional visitors. In this Examination layout, it is suggested that bold lettering be

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placed on arrow-shaped beacon yellow signs. These signs should be placed at average eye level at both ends of the private corridor and on the wall of the private corridor that faces the Examination room exit doors. Since there are two optional routes for return to the Employment Department, these arrows should be reversible (lettering on both sides). Two holes in each sign and two "L" hooks in door or wall will permit easy reversal. When the Employment Examination schedule is heavy, the arrows may be pointed toward the "OUT ONLY" route, as indicated in Fig. 12. When the schedule is light, the arrows are pointed toward the route to the Employment Department that passes the location of write-up and vision test.

Using an arrow shape for all signs that *direct* patients to such specific locations as X-Ray, Laboratory, Waiting Room, and Factory, is an advantage. Any color *other than yellow* may be used for these arrows. YELLOW ARROWS should be confined to the function of directing new employees to the Employment Department. Directions to newcomers will be made doubly clear if to "follow the signs" is added "follow the YELLOW ARROWS to the Employment Department."

In order to give an idea of the appearance and what can be accomplished in an Examination room of these dimensions, two photographs are presented. Obtaining these required some aerial gymnastics on the part of the photographer. The perspective accounts for the odd shape of the margins and produces some "hall of mirrors" illusions.

The first photograph (Fig. 15) looks down into the unoccupied room. The modern fold door is open. Furnishings and equipment as shown in Fig. 13 are in position. This type of plastic upholstered chair is quite comfortable. The arm rest is both practical and convenient for making blood pressure readings and drawing blood specimens. To prevent the unpleasantness of bare skin contact with cold plastic, thick toweling slip covers are used on the backs of these chairs.

In the second photograph (Fig. 16), a nurse accompanies a gowned female in process of being examined for employment. This represents maximum occupancy at any one time. Though this room's dimensions represent the minimum size, there is ample space in which to perform a routine Examination without creating a feeling of being cramped or crowded. Assuming that a chest X-Ray is routine, the *entire* thorax is not subjected to auscultation. Of course, gait cannot be observed, but all motions of the extremities and spine can be freely demonstrated by a patient. The modern fold door lends a feeling of sound-resistant privacy, a help to confidential counseling. There is nothing elaborate in the appearance of this room. Soft colors are used in the interior and the construction materials are simple and

Fig. 15.

Fig. 16.

inexpensive. To accompany a possible unduly long waiting period in solitary, reading material (non-company) is always handy.

VENTILATION: Ventilation of rooms as small as these is an important problem. It is advisable to consult a heating and ventilating engineer. When used frequently, it is doubtful if the mere presence of louvres in the door would be adequate. When closed, these "harmonica" type doors fit snugly. Some form of forced-air ventilation is probably necessary. Ventilation of the room shown in the photograph is supplied by a circulating air conditioner.

THE EXAMINATION TABLE: How often is an examination table used? Over the years the unanimous answer of my industrial colleagues to this question amounts to "RARELY." It is practically never used routinely during the Pre-employment Examination. This is especially true when the schedule is heavy and Examinations must be done rapidly. There are, of course, rare exceptions to the foregoing generalities, arising from individual professional habit or choice. In this project we are conforming the design to the opinion and experience of the majority. We assume that there *will be* an occasional need for a table in these facilities and, hence, one is provided in each Examination suite. On the assumpton that an Examination table is going to be used occasionally and not routinely, we recommend the fold-away type for these reasons:

1. Will not gather dust, involving unnecessary change of linens; therefore,
2. Always fresh and ready for use, and

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3. Clears space for easier and better floor sanitation.

It is conservative to state that there will not be a *specific* need for an Examination table in more than 1.5% of the individuals examined for employment. Therefore, in this layout the entire Examination can be completed by the doctor in the Examination room. Rarely, if ever, will it be necessary for the candidate to enter the suite. Recall that in PHASE III the candidate was ushered into the suite where "he or she was weighed and measured and the urine specimen was obtained." This experience removes any feeling on the part of the candidate that the facilities are small or inadequate. The vision test, trip to the X-Ray room and the knowledge of what lies beyond the fold-away door combine to create the psychological impression of rather extensive and well-equipped quarters.

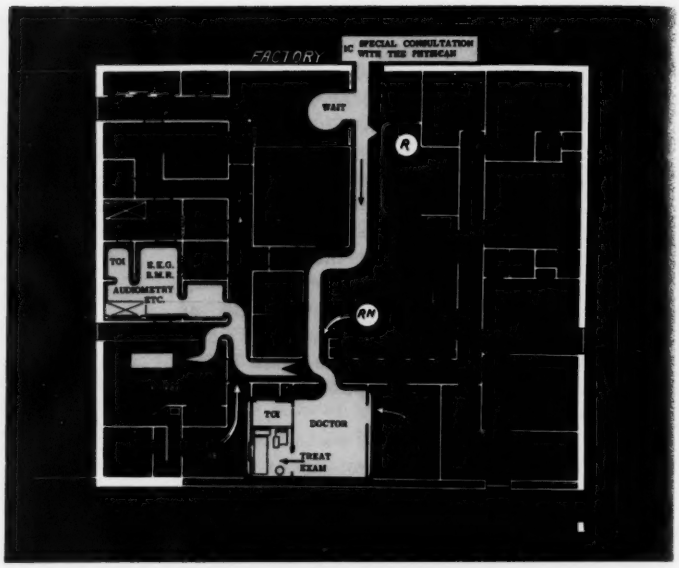

Fig. 17.

In most instances, regardless of sex, the fold-away door to the suite will remain OPEN during the doctor's Examination of a candidate in any of the Examination rooms. The light which signals to all staff members that the "doctor is at work in the suite" is turned on. By preventing the inadvertent "barging in" of staff members, this signal serves as additional privacy insurance.

1-C SPECIAL CONSULTATIONS:

We repeat here what was said in Section I regarding this particular Examination function. There are three principal origins:

1. The employee asks to see the physician because of some personal symptom or complaint.

2. Through one or a number of contacts by an employee with the Medical Department, the nurse, functioning as a screening agent, picks up sufficient information to warrant referring the employee to the physician.

3. The accumulated record of an employee indicates to the clerk or nurse the advisability of reference to the physician.

All of these cases eventually arrive in the private office of the physician. Many of them require technical diagnostic procedures over and above what can be performed by the physician in his office. Another proportion requires some temporary care or medication, such as a throat to be mopped, a boil opened, or a dressing to be changed. Facilities and equipment to meet such contingencies should be reasonably close at hand.

In Fig. 17, the yellow areas indicate the pathways and facilities used by these patients.

The following discussion pertains to the yellow areas in Fig. 17.

DOCTOR'S ROOM: The interior of the doctor's room should look as little like a hospital as possible. It is good policy to keep the material trappings of medical practice out of sight, since many, if not most, of the cases that come under this classification have no need for them. The exhibition of weird instruments and medical paraphernalia can be disturbing to patients.

RECORDS, especially "back or permanent" records, are pertinent to many of these consultations, and are available from the SECRETARY'S ROOM, which is immediately adjacent. The "active record" of cases that are under treatment or have presenting symptoms will be forwarded to the doctor by the referring nurse.

A room is provided to meet the need for EXAMINATION or TREATMENT. The contents of this room (Examination D) are screened from view by the fold-away door that can be opened to the doctor's room. The inside dimensions are 7 ft. 9 in. x 6 ft. 6 in. It is equipped with INSTRUMENTS for EXAMINATION purposes that are identical to those provided in each exam room. The chair and stool are duplicates of those used in the Examination rooms. In addition, the room contains a weighing and measuring scale and a perpendicular-type of fold-away Examination table.

For purposes of TREATMENT, this room is supplied with the materials, drugs, and instruments that are used most frequently in the temporary care or treatment of injuries and "sick" complaints. We recommend that a compressed air supply be included.

An opening is indicated in the Laboratory wall, which represents the location of either or both an X-Ray View Box and a Door.

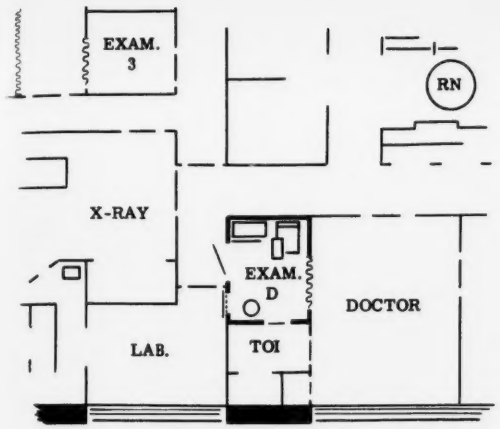

Fig. 17-A.

Interchanging the positions of the chair and round stool will permit an opening into the toilet.

Should the services of a NURSE be needed, note that the doctor's facilities are at a most convenient distance from "RN," the center of nursing activity.

The pathways and areas to the left, including X-Ray, Examination Suite B, and Examination 3, demonstrate the proximity of available facilities and services should the need arise for "technical diagnostic procedures over and above what can be performed by the physician in his office."

Similar to the example illustrated in Fig. 12-A the doctor's facilities will likewise permit FLEXIBLE usage and alteration. One of many optional arrangements is illustrated in Fig. 17-A.

The positions of the toilet and "Treat-Exam" room are interchanged. Inside dimensions remain the same. The door to the Laboratory has been moved forward. This is the same Examination D that is shown and mentioned in the discussion of Fig. 12-A.

In relation to Function 1-C, Examination D will continue to serve all of the purposes that were just ascribed to it. With the signal system installed, it will fulfill, in addition, every purpose and use ascribed to the "Examination rooms" during the outline of Phases III, IV, and V of the Pre-employment Examination. Examination D is accessible to staff members from a *private* corridor and immediately adjacent to X-Ray and Laboratory.

The fold-away table can be positioned so as to allow adequate space on the corridor side of Examination D in which to carry out "procedures over and above what can be performed by the physician in his office" — an E.K.G. or B.M.R. with portable equipment, for example.

The ADAPTABILITY to varying circumstances of these combined facilities for serving all three examination functions (1-A, 1-B, and 1-C) can be summarized as follows:

1. *MAXIMUM*: In Section I it was pointed out that the Examination Facilities "should be adaptable to the demands for GREAT NUMBERS OF RAPID PRE-EMPLOYMENT EXAMINATIONS." A layout "should be capable of immediately making available the necessary tools (facilities) to enable additional staff personnel to function smoothly and efficiently. Extra physicians, nurses, and technicians may be needed."

To meet such a circumstance, this layout would have FIVE EXAMINATION rooms and THREE SUITES available, namely, Examination Rooms "X", 1, 2, 3, and "D," and Suites A, B, and the doctor's room, which would serve Examination D (see Figs. 12-A and 17-A). This combination should supply adequate working facilities for those "extra physicians, nurses, or technicians."

It was pointed out and demonstrated in Tables III and V that all other Examination functions dwindled or ceased during times when the relative rate of PRE-EMPLOYMENT Examinations was HIGH. Experience has found it necessary under those circumstances to concentrate ALL examination facilities on Function 1-A.

2. *AVERAGE*: It was concluded in Table XIV that in our project an average of 33 individuals per day would have need of the Examination Facilities — 25 of these would be scheduled, eight *not* scheduled. Discussion of the effect of the local "QUIT RATE" on our project concluded that nine of these would be Pre-employment Examinations.

Function 1-A, the Pre-Employment Examination, is an invariable routine requiring chest X-Ray. Function 1-B represents a wide variety of procedures and time requirements. With these two points in mind, the distribution of the 33 individuals among the examination facilities will probably be as follows:

SUITE B	9	Function 1-A SCHEDULED.	Pre-employment Examination.
SUITE A	16	Function 1-B SCHEDULED	Periodic, Occupational and Health Maintenance Examinations.
DOCTOR'S ROOM AND EXAMINATION D	8	Function 1-C NOT SCHEDULED	Special Consultations.
	33	Total per day.	

3. *MINIMUM*: In Section II three points were set forth that were of equal importance to planning for HEAVY CASE LOADS. The first of these was REDUCTION IN FORCE. "Suppose the number of employees was reduced to 1000?" (There would be an inevitable reduction in the number of Medical Staff personnel.) Will the same facilities function with the same efficiency? What will be the effect on the time, motion, and the effort required of the medical personnel?"

Under these circumstances, the number of persons using the examination facilities would

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Fig. 18.

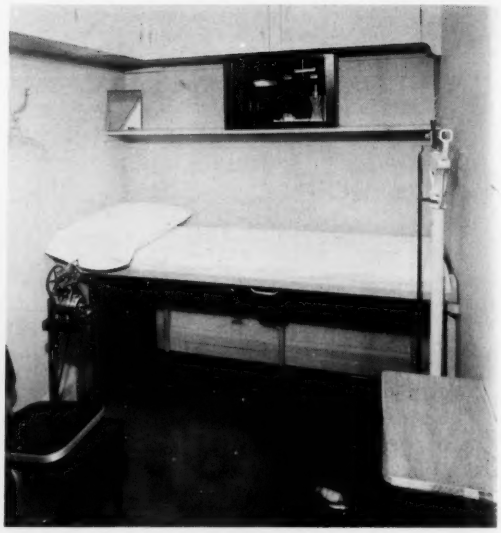

Fig. 19.

vary between five and 15 per day. Pre-employment Examinations may remain at zero for weeks. Daily Examination loads as low as this can be handled exclusively in the combined facility of Examination D and the doctor's room. These quarters would be more than adequate. Examination 3 might be used on rare occasion.

Therefore, a *minimum demand* for the Examination Functions would place the center of these activities in either Examination D (shown in Fig. 13-A), or the "Treat-Exam" room shown in Fig. 17. Note that either of these two centers of activity is located at the shortest possible distance from three points, namely, (1) — the X-Ray-Laboratory Technician, (2) — the doctor, and, particularly, (3) — "RN," the center of Nursing activity, (less motion and time required for fewer personnel to accomplish more work).

Figs. 18 and 19 illustrate the type of room placed adjacent to the doctor's office, to meet "the need for examination or treatment." Contents, equipment, and purposes are the same as ascribed to the "Treat-Exam" room in Fig. 17 and Examination D in Fig. 17-A. The photographed room is smaller than Examination D, having inside dimensions of 6 ft. 3 in. x 7 ft. as compared to 6 ft. 6 in. x 7 ft. 9 in. for Examination D.

The materials, drugs, and instruments that are used most frequently in the temporary care or treatment of injuries and sick complainis are stored in the cabinet shown on the shelf in the background. Note the air compressor, and weighing and measuring scale. In this instance, the fold-away door to the doctor's office opens into the end, rather than into the long dimension, of the room.

We use two photographs of the same room to illustrate the fold-away Examination table. In the photograph on the left, the *horizontal* type table is folded back against the wall beneath the shelf. Also, note that the writing shelf in the right foreground is folded downward against the wall. The photograph on the right shows table and shelf open and ready for use.

Overnight travelers, by land, sea or air, are familiar with the great variety of comfortable fold-away bunks, beds, and chairs. Some are masterpieces of engineering skill that could be quite costly. The table shown here represents simplicity in construction, material, and cost. The bottom is made of ¾-in. plywood, supported along the edges with ⅞ in. x 2¼ in. wood. The end boards are wide enough to come about even with the mattress top. Three sturdy hinges fix the edge of this unit to the permanent support that can be seen beneath it in the photograph on the left. The table is held in the closed position beneath the shelf by a Casement Batten Latch. A handle is bolted to the unit near this batten latch.

In rooms as small as this, supports to carry the weight of these opened tables or beds can be fixed permanently to the walls. This type of support, topped with rubber bumpers, can be seen in the photographs.

The *perpendicular* type of fold-away examination table, mentioned in describing Examination D, is illustrated in Fig. 20. Here, two sturdy hinges fix the *end* of the unit to the permanent support at the bottom of the wall recess. On the opposite wall (not shown), there is a permanent support to hold the end of this table when it reaches the horizontal position.

In this photograph, the bed linens were omitted in order to show the waterproof casing that

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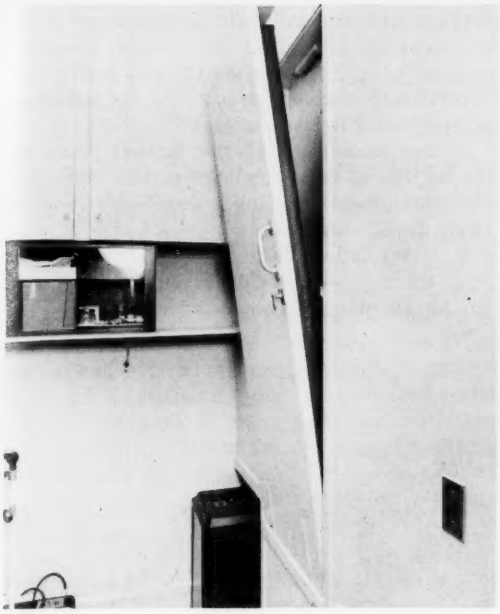

Fig. 20.

envelopes the rubber foam mattress. These casings are fitted on the under side with flaps that can be snapped on to buttons fixed to the plywood bottom of the units. Flaps and buttons are far enough from ends and edges to allow sheets to be turned under. During manipulation of the unit and when it is closed this snap-on arrangement retains and suspends the mattress in a stationary position.

The size of the unit, as well as the thickness of the mattress, is, of course, optional. Those shown here have an over-all length of 74½ inches and width of 26 inches. The foam rubber mattress is 24 inches wide and 3 inches thick. The top of the mattress is 35 inches above floor level. Restricted primarily to examination and electrotherapeutic procedures, a 10-year period of constant use has proved them practical and highly satisfactory. When there is a possibility that fold-away units will be put to such additional uses as "recovery and rest," a greater width is desirable. The recommended width of the fold-away units in the Examination Suites (specified in Fig. 13) is 30 inches. To serve the additional purposes of "recovery and rest," a foam rubber thickness of *five* inches will still be practical for all other purposes and certainly more comfortably relaxing than a thickness of three inches.

Avoid folding legs that are attached to the unit. Too often such devices prove to be an impractical, clumsy, and insecure nuisance. Whenever possible, provide supports that are independent of the fold-away unit. As demonstrated in the photographs, this is no problem when the length of the unit is approximately the same as the width or length of the room. Suppose, however, that the horizontal unit were being installed against a wall eight feet long. The supports on the right and along the back wall would remain the same. There would be two feet of open space between the end of the unit and the wall on the left. There are two simple ways to provide a strong support for the left end of this unit. Both ways will be utilized in layouts of small Departments — to be presented in Section IV.

1. Fill the remaining corner space with a built-in cabinet for linen or supplies, and fix the rubber-bumpered support to the side of this stationary cabinet.

2. Construct a sturdy square or angle-braced support and hinge it to the wall beneath the end of the unit. When the unit is folded up, the support is held out of the way, flat against the wall, by a cupboard door catch. When the unit is in use, the support is swung outward at right angles to the wall. Two small blocks or rubber bumpers placed permanently at the outer edge on the bottom of the unit will hold the support in a fixed position between them, eliminating any possibility of its slipping out of place.

The PHYSICAL EFFORT required to manipulate the *horizontal* type of fold-away bed or table is negligible and will not tax the abilities of the smallest nurse. Weight counter-balancing mechanisms are unnecessary. The longer arc of the perpendicular (vertical) type can create a weight-lifting problem. In construction and weight, the one in this photograph is perhaps the simplest and lightest; however, at the end of its downward arc, manipulation requires the downward control or upward thrust of 30 pounds. I think we can agree that frequent movement of even this lightest type could be a physical imposition on a nurse. Through the application of hydraulics, springs, and counter-weights there are many simple methods of neutralizing this type of physical effort. Detail is unnecessary. For example, mechanisms that neutralize the weight of automobile hoods and rear decks, and reduce to zero the comparatively heavy weight of the upper half of station wagon rear doors can be adapted to this particular purpose. Bear the problem in mind when the installation of the *perpendicular* type is contemplated.

The foregoing description and discussion, together with the photographs, should furnish an average carpenter with sufficient information to enable him successfully to construct and install quite a variety of these fold-away units.

This concludes discussion of the layout of the Examination Facilities. Before proceeding to the layout of the second group — 2-A Minor Treatment Facilities — an observation that was made in Section II should be considered, namely, "In manufacturing occupations 4,000 employees

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will create more cases than one full time physician can attend efficiently." There are recorded opinions which limit the normal efficiency of *one* physician to services to 2,000 employees. One-half of the figures set down in Table IV indicate that 2,000 employees *in our project* would produce an average of 183 contacts per day (164 minor treatment, two major emergencies, and 17 examination procedures). There is more than an even chance that the physician would be involved in at least 40 of these 183 daily cases. It appears highly probable that the Medical Director will need assistance of a full or part-time physician. We should, therefore, consider providing quarters for TWO PHYSICIANS. Provision to meet this probability has been made in this layout in two ways:

1. The dimensions of the doctor's room and the adjoining secretary's room are sufficiently generous to allow placing a secretary's room between two doctors' offices.

2. Examination Suite A, as shown in either Fig. 12 or 12-A, constitutes adequate quarters for an assistant physician.

From Management's Viewpoint

AMERICAN industry has attained its leadership in production in the world by a program of capital improvements of machines and methods, and by scientific research, by good management and by the plowing back of a sizable portion of its earnings to purchase further new and improved equipment. A constructive program of preventive maintenance and repairs has been high on industry's list of necessary procedures to maintain that leadership in production.

It is only in comparatively recent years, however, that there has been some recognition of the importance of human assets, by such things as workmen's compensation, group sick and accident insurance, hospital and medical benefits, pensions, etc. If industry had had a more enlightened viewpoint on this subject earlier it would have curtailed much of the labor and government sponsored social welfare programs, which in some cases are duplicated, and will add an increasing cost.

Our Company is a great believer that human assets of the organization are much more important to the success of the Company than bricks and mortar. We started our Medical Department with a full-time Medical Director 10 years ago, as probably the smallest company in the country to start such a program at that time. We have never regretted it.

In 1947, before we had our Medical Department our total absenteeism per employee averaged 70 hours or almost nine days per year, or 3½% of employee's normal work time. In 1957, this has been cut to 32 hours or four days and about 1½% of the work time. This means improved earnings possible for employee of almost one additional week and a savings of several times that to the Company, in production per employee. Absenteeism due to occupational injuries has been cut to about one-fifth of its former level and average number of claims for workmen's compensation has been reduced to about one-quarter of the average prior to the start of the Medical Department. Our number of industrial accidents involving lost time has been cut in two, and the number of sick and accident claims as a percentage of the total number of employees is less than one-third.

A healthy employee is generally a good employee. The Medical Department maintains complete history of each employee from the time of pre-employment examination, and physical check-ups are made about every 15 months. All employees have been offered inoculations and booster shots for tetanus and all are blood typed. We have been among the earliest in the area to offer polio and flu shots.

Our Medical Director works closely with safety and personnel departments in improvement of working conditions. Health educational programs are sponsored. I have many direct quotations from employees and supervisors concerning their relief from worry due to physical examinations and consultations with our Medical Director, JAMES H. McDONOUGH, M.D. Our program is well thought of by the community doctors, and our activity has been responsible for improved health programs in other companies in the area.

In starting a program with a full-time doctor, from experience in talking with the heads of many Medical Departments in larger companies, I urge that the company not consider its job finished by the mere appropriation of money, but that some heart go with it.

There are numerous examples that can be quoted where the right kind of a Medical Program has reduced turnover, absenteeism, workmen's compensation costs and group insurance. In October, 1948, The Conference Board issued a booklet on Company Medical and Health Programs and our experience firmly supports the conclusions of that report in that a good medical and health program improves employee's health and efficiency, reduces turnover, absenteeism, cost ratio of insurance, improves employer-employee relations, assists in proper placement and promotes safety.

—Summary of a talk by A. D. ROSS FRASER, President, Rome Cable Corporation, at the National Industrial Conference Board's Meeting on Personnel Administration, January 16-17, 1958, in the Hotel Commodore, New York City.

A Treatment for Os Calcis Fractures

CHESTER R. ZEISS, M.D., F.A.C.S.
Chicago

ANALYSIS of the results of the treatment of comminuted depressed fractures of the os calcis leaves much to be desired. On the whole the end results are unsatisfactory. Too often the patient ends up with a painful foot, limited in motion in spite of prolonged treatment and loss of time; and in many instances he is unable to return to his former occupation and settles for a less vigorous job usually at less pay. This poses an important economic problem. The resultant permanent disability is due to an incomplete reduction of the fracture and is manifested by a bony block under the lateral malleolus due to a spreading of the os calcis, a pronated foot, and an irregular sub-astragalar joint.

The problems in accurately reducing a comminuted fracture of the os calcis are three:

1. The elevation and restoration of the depressed central articular fragment to its original position.
2. The restoration of the astragalo-calcaneal angle (Boehler's angle).
3. The reduction of the transverse spread of the os calcis.

To solve these problems, the author has developed a procedure which modifies the methods of Dr. Boehler and Sir Watson Jones by a few additional maneuvers.

Fig. 1 illustrates the material and equipment used — a drill bit, a ¼-in. Steinman nail, a Boehler os calcis clamp, six-inch sheet wadding, and fast-setting plaster.

Under general anesthesia with the patient in a supine position, the involved foot, ankle, and lower third of the leg are surgically prepared and draped.

The surgeon and assistants are surgically dressed.

An associate elevates the draped leg.

The insertion of the achilles tendon at the os calcis is palpated, and a ¼-in. Steinman nail is drilled into the os calcis at a 35° angle plantarward in its axial plane.

Fig. 2, a lateral x-ray of the foot, illustrates the Boehler angle and the angle and depth of insertion of the Steinman nail.

The depth of nail penetration is governed by the length of the posterior os calcis fragment as revealed by x-ray. Usually this is a distance of an inch to an inch and a half.

The drill bit is now removed and a sterile 4 in. x 4 in. gauze dressing is passed over the nail to firm contact with the skin of the heel.

The surgeon now faces the plantar surface of the foot. The fingers of the right hand grasp

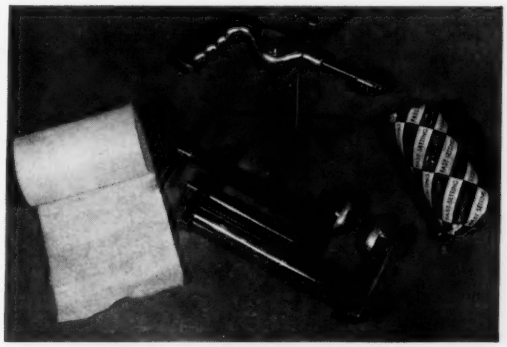

Fig. 1.

Fig. 2.

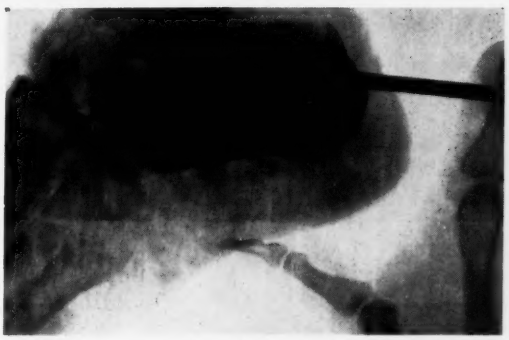

Fig. 3.

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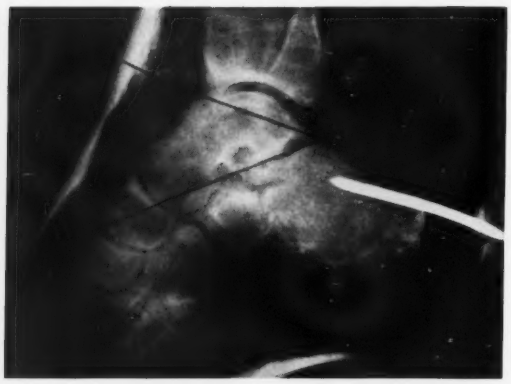

Fig. 4.

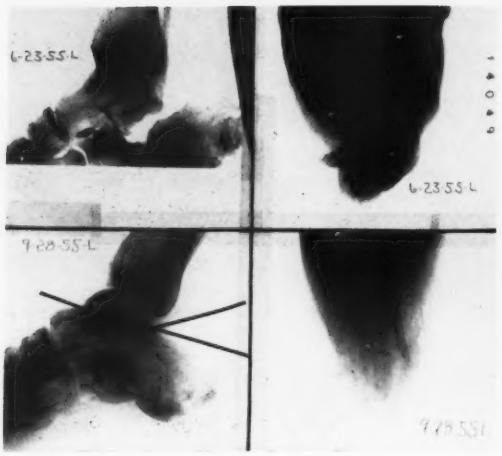

Fig. 5.

the protruding Steinman nail as the right thumb is placed on the plantar surface of the heel at the midportion of the os calcis.

Fig. 3 illustrates the position of the fingers of the right hand as it grasps the Steinman nail and the position of the right thumb as it pushes upward on the plantar surface of the os calcis.

The fingers of the left hand grasp the dorsum of the foot at the tarso-metatarsal junction as the left thumb is placed on the plantar surface of the foot in the midtarsal area.

Plantarward leverlike traction is then applied to the nail and forefoot against the upward thrust of the right thumb as it is used as a fulcrum against the body of the os calcis.

The traction and thrust are maintained while an associate places the Boehler os calcis clamp against the medial and lateral surfaces of the os calcis and quickly compresses the sideward spread of the fragments until normal configuration can be palpated and free space is present under the external malleolus. The os calcis clamp must be released quickly in order to avoid devitalization of the already embarrassed skin.

Traction and thrust on the forefoot, nail and os calcis are maintained while the associate encircles the limb from the toes to the knee with sheet wadding and then plaster. The traction is released at separate individual points only momentarily to allow for the passage of the sheet wadding and plaster. As the plaster is applied it is molded well about the os calcis and nail.

All traction forces are maintained until the plaster hardens.

Fig. 4 illustrates the maintenance of the traction force while the plaster hardens.

When the cast is hard, and with the patient still under anesthesia, the Steinman nail is removed with pliers by a gentle rotation of the nail in its long axis. Care must be taken to avoid rough handling of the nail in order to prevent manual displacement of the posterior fragment.

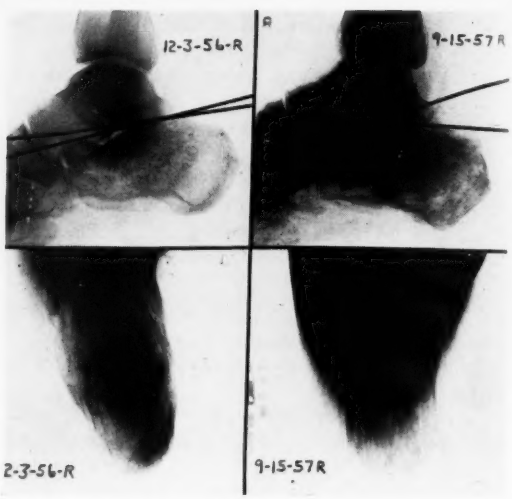

Fig. 6.

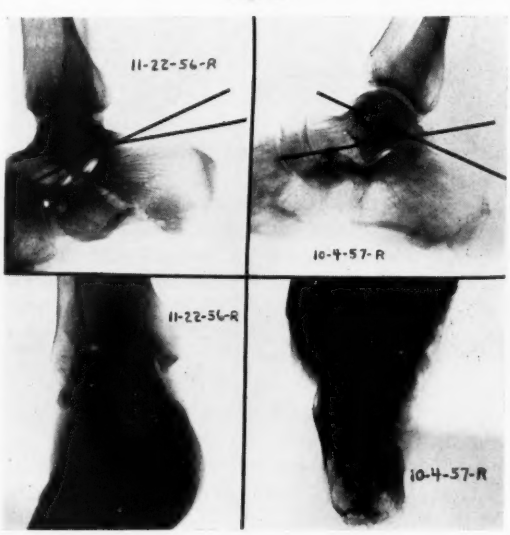

Fig. 7.

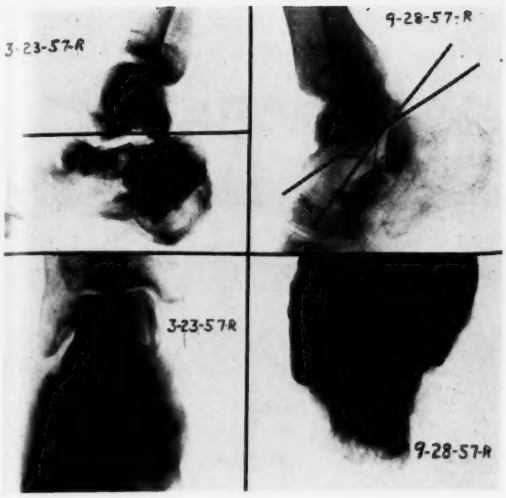

Fig. 8.

Postreductive care is similar to that of any fresh fracture on which a circular cast has been applied, namely:

Elevate foot and leg on pillows above the cardiac level for the first 24 hours.

Medication for pain.

Careful observation of the toes for swelling and discoloration.

Bivalve cast if necessary and then tape halves. If web roll is used this may have to be split at the time the cast is bivalved.

Early active toe motion, ambulation with crutches and non-weight-bearing.

Recheck x-rays at four week intervals following post reductive films.

Removal of cast at 10 to 12 weeks post-reductive depending upon the amount of callus formation.

Early application of regular shoe.

Physical therapy three times weekly for a period of six to eight weeks.

Graduated weight bearing at 14 to 16 weeks.

Full weight bearing and resumption of regular work at 18 to 20 weeks.

The following cases illustrate the results in which this method was used.

Fig. 5 — M.F., age 40. Machinist. Fell 12 feet from scaffold on 6/23/55. Os calcis manipulated 6/30/55. Re-x-rayed 9/28/55 showing maintenance of the astragalo-calcaneal angle and articular surface of the os calcis.

Fig. 6 — F.L., age 55. Millwright. Injured in fall from ladder distance of 14 feet on 12/3/56. Os calcis manipulated 12/10/56. Re-x-rayed 9/15/57 showing maintenance of astragalo-calcaneal angle and central articular surface of os calcis.

Fig. 7 — N.T., age 56. Millwright. Fell 12 feet on 11/22/56, fracturing both heels. Manipulated 11/28/56. Re-x-ray right 10/4/57.

Fig. 8 — L.B., 34 years of age. Auto accident on 3/23/57. Manipulated 3/30/57. Last x-rayed 9/28/57, showing maintenance of astragalo-calcaneal angle and approximation of joint surface to astragalus.

All of the foregoing were treated at the Little Company of Mary Hospital; all have resumed their former occupation with a minimum of discomfort and are pleased with the result obtained, and all have full motion of foot and ankle and are able to rise on their toes and walk on the lateral surfaces of their feet. None is wearing any orthopedic appliances or shoe lifts.

This method as described is simple, direct, rapidly done, with control of all fragments at all times.

(1150 West 78th)

The Aged

A NEW publication, "Patterns of Disease," prepared by Parke, Davis & Company for the medical profession, comes up with some interesting statistics regarding the aged: (1) The average aged person spends 50% more on personal health services than does the general population — or $122 a year as against $78. (2) Women are rapidly outnumbering men in the older age group. Within 20 years, six out of every 10 persons 65 years and older will be women. (3) The three commonest health problems among America's more than 14,000,000 persons aged 65 and over are heart disease, arthritis, and obesity. Heart disease ranks first, afflicting well over half of this group; arthritis follows, attacking one out of every two older persons; and obesity is next, affecting two out of five older persons. (4) Maximum concentrations of older people are in the New England states, the Great Plains states, and Florida. The widely held notion that they tend to congregate mainly in sunny regions such as the West Coast and Gulf states is exploded.

XUM

An Oral Antigen Preparation in the Prevention of Poison Ivy Dermatitis

—RESULTS IN 455 CASES OF IVY SENSITIVITY—

ELMER R. GROSS, M.D., Wilmington, Delaware

POISON IVY dermatitis, commonly thought of as one of the vacation and holiday dermatoses, may also be regarded as an occupational disease affecting outdoor workers. The poison ivy plant and its allies are major occupational hazards to tree service workers, telephone and electric power linesmen, pipeline layers, woodsmen, farmers, and large numbers of men in the armed services. In some occupations, ivy poisoning is one of the chief causes of lost man-hours.

Tree service workers, because of their frequent contact with poison ivy year after year, make excellent subjects for studies of desensitization methods. Employees of a tree service company,[1] as well as private patients, were subjects of the studies presented in this paper. The purpose of these studies was to investigate the effectiveness and safety of an oral antigen preparation,* in the prophylaxis of poison ivy dermatitis.

Selection of Prophylactic Agent

ATTEMPTS to prevent ivy dermatitis by ingesting parts of the poison ivy plant or its oleoresins are as old as the American Indian practice of chewing poison ivy leaves.

It is difficult, from a survey of the literature, to evaluate the practicality of desensitization preparations and procedures. There are too many variables as to the *source of the antigen* (fresh ivy leaves and stems, dried ivy leaves,[2] ground ivy seeds,[3] synthetic pentadecylcatechol plus hydrocortisone[4]), the *vehicle* (alcohol,[5] corn oil,[6] almond oil,[7] peanut oil,[8] aqueous solution[9]), the method of *administration* (oral[3,5,6,10] parenteral[4,7,8,9,11]) and factors controlling the amount and rate of antigen received (initial *concentration* of the antigen, *stability* of the preparation, single and total *dosage*, and graduation of dosage). Selection of the desensitization method for the present studies was based on the following analysis of the variables:

Success or failure of desensitization methods depends to a considerable extent on the dosage and on conditions affecting dosage. If the total amount of antigen in all the doses is too small, the patient is not desensitized. Presumably there is an insufficient build-up of antibodies. On the other hand, if the dose at any one time is too large, the patient may experience undesirable side effects such as pruritus and gastrointestinal disturbances. One of the important advantages of oral administration is that small doses can be taken daily over an extended period of time so that the total amount of desensitizing agent has an accumulative effect sufficient for safe prophylaxis.

Parenteral administration of poison ivy antigen is objectionable for several reasons: (1) the method is not suitable for frequent administration of small doses, (2) inflammatory reactions at the site of injection are common, and (3) incipient poison ivy dermatitis may flare up as a severe dermatitis as a result of contact between skin and antigen preparation.

In oral administration, the nature of the vehicle is important because it governs the rate of absorption of the antigen and the site of absorption. Pruritus ani is a frequent complication when oil is the vehicle.[6] Oil is absorbed slowly; some of the unabsorbed oil may reach the perineal area and cause severe itching.

Alcohol was used as the vehicle of a poison ivy extract by Schamberg.[5,12] Although this preparation was not stable and the dosage was not standardized, oral therapy with an alcoholic extract was regarded as satisfactory.

Poison ivy preparations, whether in alcoholic or oily vehicle or in dry form, are unstable because of the tendency of ivy oleoresins to oxidize. It is difficult to regulate the dosage in a preparation whose antigen content is variable. The unreliability of such preparations may explain some of the contradictory results reported in the literature.

From the above considerations, it would appear that the desirable characteristics of a poison ivy extract include (a) suitability for oral administration, (b) solution in a nonoily vehicle and (c) stability.

*Oral Ivy, Milderm Research Laboratories, 1011 Arch Street, Philadelphia.

These conditions are met by the antigen preparation used in the present series of studies. This preparation is a stabilized extract of fresh poison ivy leaves and stems in 70% alcohol. The uniform potency of the extract makes it possible to prescribe a standardized dosage.

Methods and Results

THE STUDIES were made during the years 1953 to 1957 on various groups, as follows:

In 1953-1955, a preliminary study[13] was conducted in Philadelphia. The subjects were 161 private patients, children and adults, from all walks of life.

In 1955, with the cooperation of the Asplundh Tree Service Company, 100 tree service workers were studied.

In 1956, a similar study was made of 77 tree service workers.

In 1956-1957, a study was made of 100 private patients in Wilmington, Delaware. The composition of this group is shown in Table I.

Dr. Charles R. Rein made available his records on 17 private patients who were taking the oral antigen preparation in 1954. His results are included in this report.

Only patients with known susceptibility to poison ivy dermatitis were used as subjects.

To get the pertinent histories of tree service workers, who were geographically scattered, it was necessary to use a questionnaire. The definitions printed on the questionnaire form define the terms "severe," "moderate," and "mild" as used throughout these studies.

All subjects were supplied with the oral antigen. Adults were instructed to take five drops in one-quarter glass of water, milk or fruit juice just before breakfast for at least six weeks beginning about the first week in March and then three times weekly until the end of the poison ivy season. The dose for children under six years was three drops.

The results of the prophylactic treatment are shown in Tables I, II, and III.

In the preliminary study[13] on 161 private patients in my Philadelphia office, prophylaxis was effective for 120 (74.5%), as indicated by reduced severity and frequency of attacks. Of those patients not benefited, it was observed that most had been exposed to poison ivy within two weeks after beginning prophylactic treatment. No pruritus, gastrointestinal disturbances, or other untoward effects were reported.

Similarly, 75% of the 100 patients in the Wilmington study (Table I) were afforded protection. Undesirable side effects were experienced by only one patient, who complained of nausea and gastrointestinal discomfort.

Combined results of the two studies on employees of the Asplundh Tree Service Company (Table II) show that half the men (50.8%) had no attacks at all during the season following prophylaxis, and that 80.8% were improved (no attacks or milder attacks than usual). No untoward side effects were reported.

Rein[14] reported on his cases: " . . . 12 of the 17 individuals believed the oral antigen was effective in reducing the severity and frequency of the recurrent episodes while on the prophylactic regime. In those individuals who developed severe episodes of dermatitis venenata, it was noted that they were exposed to the poison ivy

TABLE I.
ONE HUNDRED PATIENTS WITH RECURRENT ATTACKS OF MODERATE OR SEVERE POISON IVY DERMATITIS (1956-1957 STUDY)

Composition of the group	No. of Patients
Sex	
male	60
female	40
Age range (4-62)	
10-21	35
22-42	55
other ages	10
Occupations and activities (opportunities for contact with ivy)	
campers	32
sportsmen (golfers, fisherman, hunters)	19
housewives and others (possible contact through gardening or indirect contact through dogs)	44
miscellaneous	5
Results of prophylaxis	
Clinical protection, even though patients had contact with ivy and continued with their hobbies	75
Mild to moderate recurrence	20
No appreciable desensitization	5

TABLE II.
INCIDENCE OF POISON IVY DERMATITIS IN A GROUP OF IVY-SENSITIVE TREE SERVICE WORKERS BEFORE AND AFTER PROPHYLAXIS*

Before Prophylaxis (number of subjects)		After Prophylaxis (number contracting ivy dermatitis during season following prophylaxis)				Improvement†
		Severe	Moderate	Mild	None	
Severe	60	3	12	21	24	45
Moderate	79	1	8	32	38	70
Mild	38	1	1	8	28	28
Total	177	5	21	61	90	143
Percent		2.8	11.9	34.5	50.8	80.8

*Summary of two studies made during 1955 and 1956 on prophylaxis of poison ivy dermatitis in employees of the Asplundh Tree Service Company.

†Number of cases in which men subject to severe or moderate attacks before prophylaxis had no attacks or only mild attacks during the season following prophylactic treatment, and cases in which men subject to mild attacks had no attacks during that season.

TABLE III.
SUMMARY OF STUDIES ON PROPHYLAXIS WITH ORAL ANTIGEN

Study	Number of Subjects in Study	Improvement*	
		Number	%
Tree service workers (1955)	100	84	84.0
Tree service workers (1956)	77	59	76.6
Private patients (Philadelphia, 1953-1955)	161	120	74.5
Private patients (Wilmington, 1956-1957)	100	75	75.0
Dr. Charles R. Rein's patients (1954)	17	12	70.6
Total	455	350	76.9

*Attacks of poison ivy dermatitis milder or absent during season following prophylaxis.

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plant within two weeks after starting oral prophylaxis . . . There was no evidence of intolerance or gastrointestinal side effects except in one patient who was known to be extremely sensitive to poison ivy."

All the studies are summarized in Table III. A total of 455 subjects received oral prophylaxis. Of these, 350, or 76.9%, were benefited.

Two case histories are reported:

CASE 1: A.S. had severe attacks of poison ivy dermatitis every summer without exception from age three (in 1938) to age 16. In 1948 he received 10 weekly injections of a poison ivy extract without success. Three injections given in 1950 and one in 1952 were also failures. The 1950 series of injections caused an inflammatory reaction. In March, 1953, prior to prophylactic treatment with the oral antigen preparation, his reaction to rhus antigen as shown by patch test was 4 plus. One month of oral antigen treatment (five drops in one-quarter glass of water before breakfast) brought the rhus antigen reaction down to 1 plus. The treatment was continued for another two weeks, at the end of which time a patch test indicated a negative reaction. That summer, for the first time in 13 years, he suffered no attacks of poison ivy dermatitis, although he went to camp and carried on his usual activities.

CASE 2: D.S., our technician, has had severe attacks of poison ivy dermatitis for as long as she can remember. In March, 1953, a patch test indicated 4 plus reaction to rhus antigen. After six weeks of prophylaxis, her reaction became negative. That summer she was free from poison ivy dermatitis although she did considerable hunting and fishing. The following year, also, her reaction was 4 plus before prophylaxis, negative after six weeks treatment. During the summer she had direct contact with poison ivy (she can recognize the plant) but did not develop ivy dermatitis.

Summary and Conclusions

A STABLE alcoholic extract of fresh poison ivy leaves and stems was tested as an oral prophylactic agent against poison ivy dermatitis. Four hundred and fifty-five subjects, including private patients and the employees of a tree service company, were given the extract orally in small daily doses for six weeks prior to the poison ivy season and less frequent maintenance doses during the season. All subjects had a previous history of sensitivity to poison ivy. During the season following prophylaxis, 76.9% of the subjects were either free of ivy dermatitis or experienced milder attacks. Two of the patients complained of nausea and gastrointestinal disturbances. There were no other reports of untoward side effects.

(Medical Arts Building.)

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Prevention

WITH HEALTH, with fullness of unalloyed, unimpaired life, we professionally, have nothing to do," an eminent physician, Dr. Edward Jarvis, said recently. Though this may be generally true, professionally, yet the intelligent physician "can see arrows of disease, invisible to anyone else; watch their havoc, and know whence they come, and how they may be stayed"; and there are many eminent medical men, who have, as individuals, nobly used the means which their superior position and knowledge have placed within their control, in the prevention of disease, and in the promotion of public health. And we wish to increase the number of such professional men.

—LEMUEL SHATTUCK, as quoted by WILSON G. SMILLIE, M.D., in "Preventive Medicine and Public Health"; in *Industrial Health* (Health League of Canada), November-December, 1957.

The Organization of

An Effective Safety Program

—ROLE OF THE MEDICAL DEPARTMENT

CARL U. DERNEHL, M.D., Assistant Medical Director
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IT IS fitting that the role of the Medical Department be considered in the organization of an effective safety program. All the mechanics of such a program may be worked out in minute detail, but in the final analysis the mental responses of the employee in thinking safely or unsafely and consequently working safely or unsafely are the determining factors in its success. We must never forget the concept that safety deals primarily with people and their attitudes and responses. In a large degree the Medical Department also deals with the problems of people and their physical and emotional responses to these problems.

There are many accepted and clearly demonstrable ways in which a Medical Department plays a role in safety. Take, for example, the basic concept of the preplacement physical examination which attempts to determine if a prospective employee is physically and emotionally capable of performing a job safely and efficiently. The elimination of those with defective vision from jobs such as truck driving or from certain other activities requiring accurate vision will obviously result in less accident potential. Less obvious perhaps is the benefit derived from proper placement of those with weak backs or other not easily detected physical weaknesses. While we may perhaps question the status of many back injuries as accidents, and thus their inclusion in the safety record, the practical fact remains that whether they show as a safety statistic or not, we pay compensation claims on many of them. I think we can agree that a man physically matched to his job requirements is generally apt to have a safer work record.

The value of periodic health inventories in maintaining a healthy and safe working force deserves comment. You are all aware of the need for periodic health appraisals of the crane operator, the railroad engineer, the airline pilot, and the operator of various forms of heavy equipment, to mention just a few. I wonder, though, how many of us have considered the hazardous situation which might exist if a supervisor or foreman were to become suddenly incapacitated from some physical ailment at the time of a critical emergency. Detection of such an ailment during the course of a periodic health examination might have resulted in corrective measures which would lessen the chance of collapse in a time of stress and danger. Perhaps a reassignment of work duties would have retained the skills and experience of the man, but would have provided for another less vulnerable person to be available to meet the emergency. There are many situations with safety implications which might be cited, but time does not permit that we enlarge upon them.

I have been profoundly impressed by the apparent relationship between the neurotic personality and a high accident rate in such a person. Interestingly it seems that these persons seldom have severe mutilating injuries, and in my experience the lost-time accident rate in these persons is low. However, it must be pointed out that experience has clearly demonstrated that repeated minor accidents increase the potential for a lost-time accident, and that, sooner or later, one of these accident repeaters will sustain a serious injury. It is difficult to detect the accident prone person during a physical examination. When accident proneness is suspected it is even more difficult to find convincing evidence for rejection for employment. The Medical Department can, however, make a valuable contribution in these cases by maintaining records which detect the accident prone person, and by advising the Safety Division of this fact. This makes it possible for safety personnel to pay particular attention to the individual in question before a serious accident occurs.

The Medical Department has an unusual opportunity to engage in safety education. Injured personnel are often aware of infractions of basic safety rules which resulted in an accident whether it be major or minor. Skillful and sympathetic discussion of the events leading to

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an accident may cause the injured person to develop safe working attitudes for himself in an unforgettable way. Others who may be within range of the conversation frequently benefit from such discussions. Gentle chiding from a sympathetic nurse is often of value in preventing subsequent injuries resulting from carelessness or poor work habits.

In a more direct manner the personnel of the Medical Department engage in safety education through participation in first aid training, and through talks to groups of plant workers regarding job hazards and the need for conscientious use of protective equipment. Many of these activities are in cooperation with and supplementary to the program of the Safety Department.

WE HAVE heard much in recent years about the importance of "the whole man" in the practice of medicine. Perhaps we should give serious thought to this concept in safety practice also. You will all recognize the inherent truth of the idea that a man carries all of his troubles, worries, and illnesses through the gate and to his workbench each day. Similarly, he carries home at night his rancors and job dissatisfactions if they exist. It takes little imagination to see the added accident potential in an employee whose mind is concerned with home problems, financial worries, or personal and family illness rather than with the job at hand. It is here that we believe a Medical Department makes a significant and frequently unrecognized contribution to plant safety.

In any well accepted medical program, advisory services become a vital part of the professional activity. I recall rather vividly the case of a welder who sustained frequent small injuries and ultimately came to my attention for a stress-initiated illness. He was given the opportunity to unload his problems on a sympathetic listener. This was gratefully accepted by the patient and the discussions that followed must have had some beneficial effect because his accidents became infrequent and we saw him only occassionally in the next several years. After several minor injuries in a period of a few weeks he was referred to me by the nurse, and it was discovered that once more a new source of worry was causing him trouble. Again the opportunity to "ventilate" was all that was needed to meet his problem, and his accidents no longer occurred. How often this same pattern is repeated in single and less dramatic fashion we have no way of knowing. Nor can we guess the number of accidents which may have been prevented by affording the opportunity to discuss problems before accident proneness became evident.

In a like manner, reassurance regarding personal health is of benefit in easing the worry of employees. This may be accomplished at the time of a periodic health inventory examination or by special request on the part of the employee. Advice on health problems in the employee's family may allay fears and worries which lead to inattention on the job and poor and unsafe work performance.

Finally, the Medical Department plays an important part in the detection of environmental conditions which may be unsafe in a subtle fashion. Among these might be lighting, ventilation, heat and humidity, noise, and subclinical manifestations of occupationally induced illness.

You will by now have recognized the great overlap of interest in safety of the Medical and Safety Departments. This is as it should be, since each in his own sphere is primarily concerned with the health and well-being of the worker. Through cooperative effort, we can do a better job.

Hospital History

ONE out of eight Americans will be hospitalized during the coming year. For the first time, many of us will know what a hospital really is — how it restores and protects our health. There was a time when the name "hospital" had an entirely different meaning. Even as late as the eighteenth century "hospitals" were used primarily to house human derelicts. The idea of a voluntary hospital solely for the curable sick emerged in the British Isles in the early 1700's. The Pennsylvania Hospital in Philadelphia is generally accepted as the oldest true American hospital. It was founded in 1751 with the active aid of Benjamin Franklin. In the 1800's the quality of patient care and hospital maintenance were so poor that most hospitals actually contributed to the spread of disease. With the development of ether, radical improvements in sanitation and hygiene, the use of new techniques and specialized equipment, hospitals emerged gradually into the form we know today.

—From "The Hospital Throughout the Ages" by ARNOLD R. RIVEN, first of an eight-part series, appearing in the spring issue of Blue Print for Health, publication of the Blue Cross Commission of the American Hospital Association.

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Dermatology in Industrial Medicine

III. What are the important measures in prevention of industrial dermatoses?

THE COMMITTEE *on Dermatology of the Industrial Medical Association has a project underway in which questions of practical aspects of occupational dermatoses are posed by the Committee and answered by members of the Committee. Following are two answers by members to the third question as stated above:*

(1) JOSEPH V. KLAUDER, M.D.
Philadelphia

CLEANLINESS, adequate and accessible washing facilities, protected clothing, barrier creams, mechanical appliances, exhaust fans, hoods, guards, and proper ventilation are well-known preventive measures and need not be discussed.

The following discussion of some preventive measures correlates my study of actual causes of industrial dermatoses.[1] Pragmatically, the elimination of these causes constitutes preventive measures.

In the aforementioned study the predominating causes were a variety of primary irritants; the most frequent were nonaqueous solvents, These comprised petroleum products, coal tar derivatives, esters, ketones, alcohols, chlorinated hydrocarbons and turpentine. Solvents caused dermatitis through exposure in the course of work and/or as hand cleansers. I would name solvents as the one most frequent causal agent throughout all industries. There is a wide use of solvents in industry — as anticorrosive agents, as coolants, and for cleaning small mechanical parts and larger objects such as printing presses.

A conspicuous mechanism in the acquisition of dermatitis was the immersion of the ungloved hand into the solvent to clean small mechanical parts or to saturate a cloth (as used to clean printing presses).

All solvents are dermatitis-producing in relation to degree and duration of exposure. The use of synthetic rubber gloves is an important preventive measure, if used only part time to curtail duration of exposure. The latter is an important consideration in prevention of dermatitis, not only from solvents, but also from any weak primary irritant or allergenic substance. The skin has its breaking point. Prolonged exposure to a cutaneous noxa apparently causes exhaustion of the defensive mechanism — "Erschöppung" dermatitis of German writers. I have observed a greater incidence of dermatitis from solvents apparently arising out of overtime work — 50 or more man hours weekly. Means of preventing more than usual exposure or unnecessary exposure to an irritant or allergenic substance are an important consideration in prevention of dermatitis.

To prevent unnecessary exposure the worker should be educated to use a tool instead of his hands, or to use proper technique when exposed to cutaneous irritants. A cloth, for example, held in the hand need not be saturated by pouring solvent that also saturates the hand and lower forearm. At least, a container with a wide opening allowing liberal flow of solvent should not be employed. Using a cloth folded into a pad the undersurface of which is dipped into solvent affords no, or a minimum, contact of the hand with solvent.

Such means of preventing unnecessary exposure are time-consuming and therefore unpopular. Moreover, if the incidence of dermatitis in a given plant is not high, elaborate preventive measures are not mandatory (Case I). Collectively such measures throughout all industries are of importance.

THE NEXT most frequent cause of industrial dermatitis was direct and indirect result of trauma and accidental injury. Untoward cutaneous reactions from this source are many and varied. About 18 different diseases of the skin were included in this category. Space permits only brief discussion. It included dermatitis from such sources as a splash of a caustic, or hot solution, or leaking pipe, or caused by an occlusive dressing, discharge, or initiated by a wound or burn, and sensitization dermatitis resulting from locally applied medicaments, as well as all infections arising out of occupational injury — untoward reactions from treatment, such as urticaria from penicillin, and a number of cutaneous disorders caused by injury, such as alopecia areata, herpes zoster, and systemic disease appearing at site of trauma.

The means of preventing accidents and injuries are important in preventing the afore-

1. KLAUDER, J. V.: Some Aspects of Occupational Dermatoses. *J.A.M.A.* 160:442, 1956.

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mentioned aspects of occupational dermatoses. A woman sustained avulsion of part of her hair caught in the machine she operated. Subsequently, her co-workers were given hair nets and caps, and guards were placed over the revolving machinery. The wearing of flexible wire mesh gloves by abattoir employees who worked with sharp knives decreased the incidence of laceration of the hands. The latter is the portal of entry of the organism causing erysipeloid commonly appearing in abattoir workers.

I do not believe workers can be selected through history or physical examination in order to prevent or minimize sensitization dermatitis. An exception is a racial one — the Negro has low incidence of sensitization dermatitis.

Fundamental principles in prevention are: minimum exposure of the skin to the allergen for the briefest period possible (Case I); avoidance of contact with any damaged skin (as a burn), and, whenever possible, rotation of workers to avoid prolonged exposure to the allergenic substance. Other preventive measures are enumerated in the first paragraph of this report.

Prolonged exposure of the hands to water is dermatitis-producing, and this applies to any alkaline substance — cement, soap, other alkaline detergents (surfactants), alkaline salt detergents, and excessive hand washing. One measure in the direction of preventing dermatitis is the use of an emollient at end of the work period; this applies also after exposure to solvents. If necessary, an acidified one to act as a buffer, such as 2% acetic acid in an equal part of anhydrous lanolin and petrolatum.

THE METHOD of hand cleansing merits attention. The worker should not select his method of hand cleansing (usually such solvent as is available in his shop). This includes not only factory but also office workers — for example the diverse harmful methods girls use in removing "ditto" ink from their hands.

If solvents are used, one with a higher boiling range should be preferred — mineral seal oil rather than kerosene, light spindle oil rather than mineral seal oil. Light spindle oil (white medicinal mineral oil is of comparable boiling range) effectively removes grease, oil, grime, and paint, and is less harmful than are the commonly used kerosene, gasoline, paint thinner, and turpentine.

If other cleansing agents are employed, for example, calcium hypochlorite, the minimum concentration should be used in a sparing manner and not by immersion of the hand in a strong solution.

The following case record serves to illustrate lack of the foregoing preventive measures:

CASE I: A woman employed four months as a photo printing apprentice, poured 4% solution of ammonium dichromate from a container (it properly had a spout) on a small plate held in the left palm. The solution overflowed on the hand and lower forearm. This was done about every 20 minutes throughout the work day. She washed the plates with soap and water and removed ink from the hands with gasoline. She used an alkaline gritty paste as hand cleanser four times daily. At home she washed dishes and did other housework.

Fig. 1.
Case I: Sensitization dermatitis to dichromate. The left hand and forearm more exposed showed greater involvement. The eczematous dermatitis had a papular element with some grouping of the papules (as seen on the forearm). This pattern occasionally occurs in dichromate sensitization dermatitis.

She said the only instruction she received was to rinse if the hand contacted the dichromate solution. This was not done, since her hand was almost constantly wet with the solution. The method of hand cleansing was her own selection.

Dermatitis of both hands appeared about three months after starting work. The left hand was more affected, and only the left forearm (Fig. 1). Soon thereafter she used rubber gloves and continued to work.

Diagnosis of sensitization dermatitis to dichromate was confirmed by patch test: 0.1% solution of ammonium dichromate closed patch test positive; one drop 1% solution open patch test positive. Chrome-plated metal, chrome-tanned leather, wool dyed with chrome mordant gave negative reaction. The eruption disappeared three weeks after beginning treatment. Some writers report unusually long duration of dichromate sensitization dermatitis. Her foreman told me new workers learn to pour the solution without contacting the hand. "It never bothered my hands, or other workers exposed to it" (a very limited number).

Prevention of industrial dermatoses requires vigilance of the industrial physician, industrial hygienist, and safety and personnel directors. In smaller plants, in the absence of this personnel, the problem is greater. Education of foremen, supervisors and industrial nurses is necessary.

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The skin is an extraordinary membrane. It is a contributory barrier in prevention of industrial dermatoses because of its keratin structure, its lipid surface and its Ph.

(1934 Spruce Street)

(2) EARLE D. OSBORNE, M.D.
Buffalo, New York

AT THE TIME of the pre-employment examination, the history of atopic manifestations should be noted, as well as a history of reactions to weeds, such as poison ivy; drugs applied locally, such as iodine, mercurials, and to drugs administered by mouth or parenterally, such as penicillin, sulfa drugs, etc. A history of repeated attacks or a prolonged attack of dermatitis venenata should be sufficient to exclude a workman in an industry where there is a skin hazard.

Applicants who present an excessively oily or seborrheic skin should not be hired for a job where the skin frequently contacts oils and greases.

Pre-employment patch tests as a routine procedure are of very little, if any, help. It the aplicant has no previous history of dermatitis and no previous history of exposure to the known allergens in the plant, the tests will be valueless. The tests would be of value only in individuals with a history of previous attacks of dermatitis.

The conditions of work are all-important. Since every chemical substance or allergenic substance has a definite index of sensitivity, it follows that the more the exposure of the individual to an allergenic substance, the greater the liability for the development of dermatitis. This means that machines and equipment must be designed and used to prevent contact of the workman with known allergenic substances either directly or through the air. Dusts and fumes must be removed with suction and adequate ventilation. Workmen must not be allowed to expose the bare skin to solvents, degreasing agents, rustproofing, cutting and coolant oils. Grinding, filing and sanding operations must be done on machines which completely remove the waste from contact with the workman. In the early days of nickel and later chrome plating, dermatitis at points of contact and from airborne fumes was extremely common. This has been almost entirely eliminated through closed processes of manufacture. In the use of cutting and coolant oils and in the manufacture of foam rubber products, the same experience has been true. The incidence of dermatitis largely depends upon the development of closed processes of manufacture.

Cuts, abrasions, bruises and burns should be treated with nonsensitizing medication. The therapeutic armamentarium of any industry need not at the present time contain any drugs used for local application that have a high sensitizing index.

An accurate etiologic diagnosis is absolutely essential at the first opportunity and before treatment is rendered to prevent the assumption of responsibility by industry for many nonoccupational conditions.

WHEN known allergens are present in an industry and engineering processes have not been or cannot be produced to prevent contact, the wearing of protective clothing can be extremely valuable. This also includes masks, gloves, shoes, boots, etc., to prevent contact with liquid, solid and volatile allergenic substances. The use of protective ointments and creams to prevent sensitization dermatitis is, in our experience, useless. However, they are of value in preventing primary irritation.

In industries where workmen are known to be exposed to sensitizers or primary irritants, frequent washing of the exposed parts should be required and facilities for the same readily available. No strong alkaline cleansers should be used.

Among the most costly compensation cases are those of sensitization contact dermatitis when the workman is not removed from continued or even periodic contact. Through stubbornness and lack of foresight by industry and workers themselves, many men are rendered useless for long periods of time. In our experience we have never seen a case of so-called "hardening" in true sensitization contact dermatitis.

(71 North Street.)

Quick Bite

TREND toward shorter lunch periods in American business and industry has led many firms to provide complete lunches for workers via vending machines. More than 80% of plant workers now get half-hour for lunch, compared with 69% in 1950. Similarly, 42% of office workers get half-hour lunch periods today, compared with only 31% in 1950. —*Industrial Relations News*, January 25, 1958.

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From the Archives—

A Sequel to Bernardino Ramazzini's

"Of the Disease of the Bearers of Corps"

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Glasgow, Scotland

ONE OF the great fascinations of De Morbis Artificum Diatriba is that it not only instructs and inspires, but it amuses and diverts. To me it is the scientific counterpart of Chaucer's Canterbury Tales. The first translation in English was published in London by an unknown author in 1705, just five years after the original Latin edition. The title is translated: "Of the Diseases of Tradesmen or Such as live by Particular Exercises and Callings." Chapter XVIII treats "Of the Diseases of the Bearers of Corps."

Ramazzini records that "those engaged in the business of Bearers and Undertakers for Funerals being obliged to go down to foul vaults full of half-rotten corps, were thereupon liable to many pernicious diseases, especially malignant fevers, sudden death, cachexies, dropsies, suffocating catarrhs and other dismal distempers." Many subsequent writers dealt with the subject under diseases caused by putrid effluvia.[3] Generally they disputed that the handling of corpses even when decomposed was in any way inimical to health. I am not concerned with the occupational diseases of funeral undertakers or morticians though they form a very useful class of society. In the chapter just cited my attention was attracted by the record of the following incident:

"There goes a known story of one Pisto, a bearer that bury'd a young man finely dressed up in cloaths with new shoes on the feet of the corps; and a few days after finding the church-doors open, open'd the tomb, went down into the grave and took the shoes off the corps; but had no sooner done, than he fell down and expired upon the corps, and so suffered a just punishment for violating the sepulchre."

Historical records relate that in the early decades of the 19th century in Great Britain, notably in London and Edinburgh, there existed groups of men who engaged in Particular Exercises. These men followed the calling of Body Snatcher or Resurrectionist. Robert Louis Stevenson in 1894 contributed a short tale entitled The Body Snatcher to the Pall Mall Gazette (Christmas Extra!!) and James Bridie, a consultant physician and noted Scottish playwright, used the theme in his play The Anatomist. From the various accounts it is clear that the occupation involved considerable hazards, accident and disease, which in our modern jargon would be classified as physical, mental and social.

A comprehensive account of their craftsmanship, methods of working, trading methods, organization, group relationships, and social habits is contained in the Life of Sir Astley Cooper, Bart., surgeon of Guy's Hospital, by his nephew Bransby Blake Cooper, Esq., F.R.S.[1]

The practice of exhuming corpses from graves had its origin in the need to obtain bodies for dissection in the study of anatomy. It is recorded that Vesalius while a student in Paris in his search for material at great personal risk undertook various "body snatching" expeditions.[2] In passing it is of interest to remark that, like Ramazzini, Vesalius was a professor at Padua, where he was appointed Professor of Surgery and Anatomy in 1537. Body snatching, however, did not become a regular occupation in England until early in the 19th century, when a great increase in the number of students seeking to gain instruction in anatomy and surgery, required an increase in the supply of bodies. Schools of anatomy were established by teachers, many of them leading surgeons, including John Hunter and William Hunter, Astley Cooper, and John Abernethy in London. The supply of subjects from normal sources, such as the bodies of paupers who died in poor-law hospitals, was inadequate. Hence arose the practice of body snatching from graveyards and vaults. The public regarded the work as reprehensible and those who participated in the trade as the vilest criminals. Their ranks were recruited from the lowest and most degraded characters who sought easy

money. And, as it proved, the trade was highly remunerative.

The practice was to remove new or recently buried bodies from the graves or vaults in which they had been deposited. To avoid detection operations had to be carried out during the hours of darkness usually by the dim flickering light of an oil lamp. Sometimes they 'worked the grave' singly — the amateurs — but more usually in groups directed by a leader. These groups constituted the 'regulars.' To facilitate and expedite the work they devised special tools, crowbars and long wooden shovels, which would not clank against stones and so raise the alarm. The work called for considerable physical strength and courage — usually Dutch. Inevitably they suffered injuries from their tools and from falling stones. Strains — there is no record of slipped discs — were common from handling heavy corpses in confined spaces and often in slippery heavy waterlogged ground.

The relatives of the deceased and the graveyard authorities organized measures to oppose these reprehensible practices. After an interment, watchmen assisted by relatives formed a guard until such time as it was thought that decomposition would be so far advanced as to render the corpse useless for dissection. Guards were armed with blunderbusses and horse pistols, and so gunshot wounds were a hazard of the job. One escaping snatcher at least was marked for life with a whiff of grapeshot in his old Roman Emperor — Gluteus Maximus. If a resurrectionist was caught he was violently beaten, a favourite weapon being a cat o' nine tails made from wire. Spring guns operated by trip wires and mantraps were a considerable danger, particularly to novices. The old hands were astute to these devices and took precautions. Graveyards were surrounded by high walls in which the top courses were left loose and broken glass cemented on top. Falling accidents occurred and cuts and abrasions from the glass. No doubt many of these wounds became putrid.

It is related that one Whackett was caught red-handed by an incensed crowd who threw him into a deep grave and shovelled earth over him. This done the crowd proceeded to his house where "they destroyed every article of his furniture, seized his wife and children, whom they dragged through a stagnant pool." The following incident is rather similar. Charles Turner Thackrah conducted a school of anatomy in his practice at Leeds. Indeed this was later incorporated in the Leeds Medical School when it was founded in 1831. Thackrah was often short of subjects. Robert Yates Whytehead, the son of Henry Yates Whytehead, who was one of Thackrah's apprentices, records the following incident as related to him by his father.[4]

"During one winter Mr. T. was at his wits' end for a subject for an important course of lectures. If one could not be obtained, and that speedily, the course would have to be postponed. So three of the students determined to rise to the occasion. The graveyard of the old parish church was in the middle of the town. It was crossed by several footpaths. But these were not lighted at night, and as a dark graveyard is not a favourite place of resort they were seldom used after dark.

"In a large town like Leeds burials were of constant occurrence, and it was not difficult to arrange with the old sexton to give them the tip as to where and when a body could be 'resurrected' without much risk of discovery or interruption.

"The sexton himself kept conveniently out of the way; but his wife was induced, for a 'consideration,' to act as guide. Whilst two of the students were at work at the newly-made grave the other kept guard at a safe distance. And it was arranged that if anyone came within view of the operations he should give them a signal to lie low, whilst he was to allay suspicion by appearing to be courting the sextoness, leaning against one of the headstones.

"All went well until the diggers had just succeeded in raising the body from its resting place, when one of the old 'charlies,' or watchmen, came near the scene of action. His suspicions were aroused; he sprung his rattle. There was no time to be lost if they were to escape with their booty. They hastily thrust the body into a sack and took to their heels. Then began a hue-and-cry; other watchmen and loafers joined in the pursuit. The three depredators fled as if for their lives. Being young and active they soon left their pursuers some distance behind, although the one of them who was burdened with the sack had to set the pace for his companions. Still, they managed at length to get out of sight, and almost out of earshot of their followers.

"Suddenly, on turning a corner, they received a check; they found themselves in a blind alley, with a high wall at the end of it. Two of them managed to climb over the wall and get clear away; but the third, weighted with the sack, only just succeeded (as his pursuers turned the corner) in scrambling over the wall, and landing in a cesspool which took him up to his neck! He had sufficient presence of mind to restrain himself from 'naughty words,' and remained in this unsavoury hiding place until the coast was clear and he could safely but sadly wend his way homeward. My father used to describe, with great gusto, the bath which his fellow student had to submit to, under the pump, before he could be admitted to the house to change his garments."

There is no evidence that Resurrectionists acquired any disease from the corpses, though in

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times of epidemics some, undoubtedly, were infected. They were, nevertheless, under considerable mental strain as is revealed by the following episode:

"Some awkward predicaments occasionally resulted from the means adopted by the coachmen to insure the payment of their exorbitant demands under these circumstances. I knew a pupil, who was conveying a body by coach to his Hospital from another and better-supplied School, astonished by suddenly finding himself in front of the Bow Street police-office, when the coachman, tapping at the front window, said to his affrighted employer within, 'Sir, my fare to So-and-So is a guinea, unless you wish to be put down here.' The reply, without any hesitation, was 'Quite right, my man, drive on.'"

Blackmail — threatening information to the police — was a regular practice between rival groups. If there is honour among thieves there was apparently none between body snatchers. It is understandable that the constant mental strain and the nature of the work should be reflected in their social habits. Many of them were constantly drunk from rum and gin. Possibly if occupational mortality statistics had been available they would have shown that the mortality from dropsy and cirrhosis of the liver was excessive in this trade — or was it a profession?

The money was good — from four to eight guineas a corpse — and a good workman and his associates could obtain several corpses in a single night. At this period a labourer's wage was about 12 shillings weekly. The body snatchers were thus enabled to work for a few nights and then debauch for several weeks. In circumstances, as in the case of the notorious Burke and Hare at Edinburgh, exhumation became too arduous so they resorted to murder — even among themselves — for their supplies.

Few escaped periods of imprisonment; some in fact were transported to convict colonies overseas. But their services were indispensable to surgeons and teachers of anatomy, who, as shown in this extract from Sir Astley Cooper's diary, often supported them and their dependents.

1828.		£	s.	d.
Jan. 29.	Paid Mr.——, to pay Mr.——, half the expenses for bailing Vaughan from Yarmouth, and down	14	7	0
May 6.	Paid Vaughan's wife	0	6	0
29.	Ditto Vaughan, for 26 weeks' confinement, at 10s. per week	13	0	0
	Four subjects, two male and two female (Murphy), at twelve guineas each	50	8	0
June 18.	Paid Murphy, Wildes, and Naples, finishing money*	6	6	0

*The term, "finishing money," alludes to a sum of money which was usually given at the end of a session: the amount was generally regulated by the services which had been performed by the Resurrectionist during the time.

The use of artificial teeth by dentists provided the Resurrectionists with a more refined but none the less dangerous avocation. They did not trouble to remove the body but only the teeth. During the Peninsular War many went to France and Spain where they became the 'pallid pimps of the dead line,' spoiling the fallen soldiers of their belongings and removing their teeth. The teeth of young men were specially coveted. In a single excursion of a few weeks' duration a haul of teeth worth several hundred pounds could be obtained.

Occupational accidents and diseases when recognized must be prevented. The regulation of the supply of bodies for dissection which followed the passing of the Anatomy Act in 1832 meant almost absolute prevention of this hazardous occupation. Their works, however, were not without merit for as remarked by Bransby Cooper:

"Their race having ceased with the necessity for their occupation, their era now forms an important page in the history of surgical science."

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Do-It-Yourself

WHEN EMPLOYEES at Dow Chemical Company, Midland, Michigan, received their weekly paychecks recently, they received at the same time a diabetes test kit — containing special strip of paper and complete instructions for using strip to make diabetes test at home. Strips were then mailed by employees to Dow's Medical Department where they were tested. All who took tests were notified of results, whether positive or negative. Persons who tested positive were asked to consult their family physician. Test results were confidential. Additional kits were also made available for other adult members of employees' families. —*Industrial Relations News*, January 25, 1958.

The Periodic Evaluation of Health

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IS IT WORTHWHILE to examine individuals periodically, even if they are symptom-free, for the purpose of measuring their health with the goal of helping them maintain or improve it?

Slightly over three years ago, Sir Adolphe Abrahams, writing in *Lancet*, expressed skepticism about the value of such examinations. Commenting on his opinions, and on Baker's then-recently-reported results of such efforts, the *J.A.M.A.* in an editorial raised the following four questions, and commented briefly upon possible answers to them:

1. What shall constitute a medical "overhaul" in a person without any complaints?
2. Is reassurance of a patient after a routine check-up that he has no disease valid?
3. Do the results of complete medical examination in a large group of patients justify the outlay of time and money, and the discomfort to the patients?
4. Is it wise to place emphasis on disease instead of health in educating the public?

It might be appropriate in reviewing the experience of some groups relevant to these problems, to do so in the format of suggested answers to these same questions — hastening to add that what is offered represents only some current thinking rather than "answers," and that the thinking itself is based largely on the reported work of others rather than upon studies conceived and carried out by the author. It would seem, moreover, that our purpose might be served better by approaching the questions in an order different from the one in which they were asked.

FIRST: *Do the results of complete medical examination in a large group of patients justify the outlay of time and money, and the discomfort to the patients?*

Naturally, the "yield" or return from such examinations would vary in the sexes, with age, race, location, socio-economic and other factors, with the calibre and thoroughness of the examinations and examiners, the cooperation of the examinees, and the effectiveness of follow-up observation and treatment. Accurate measurement of the value of periodic health maintenance examinations will require long-continued, well-controlled studies of two large groups, comparable except in that the members of one would and those of the other would not, have such examinations. (Happily, this type of study has been planned by the Department of Preventive Medicine in the University of Pennsylvania, and will be sponsored by the Kellogg Foundation.) In the meantime, however, there is already sufficient experience to permit discussion of the value of such examination for some groups under some circumstances.

Many of us practicing preventive medicine clinically in the implementation of programs designed to help maintain the health of employed groups, admittedly composed largely of adult males, have observed that the initial thorough examination of their health usually results in the discovery in one-fourth to one-third of them of some previously-unrecognized disease that is considered "significant" inasmuch as it is of such a nature that it could or will result in some disability or shortening of life. Table I summarizes the experience of special investigators in this regard.

With respect to the types of newly-diagnosed diseases encountered at the times of such examinations, hypertension and coronary artery disease are common amongst the significant cardiovascular diagnoses; recto-sigmoid polyps or carcinomas, cholelithiasis and duodenal ulcers are amongst the more frequent important gastrointestinal diagnoses, and diabetes and thyroid disease are found quite frequently amongst the significant metabolic diagnoses.

With respect to the frequency with which newly discovered, significant diseases have not caused symptoms, the experience shown in Table II is felt to be representative.

TABLE I.
PERCENTAGE OF INDIVIDUALS FOUND ENTIRELY NORMAL AND PERCENTAGE FOUND TO HAVE SIGNIFICANT NEW DISEASES UPON PERIODIC HEALTH EXAMINATION

Number Examined	% Entirely Healthy	% in Which Significant New Disease Was Discovered	Investigators
500	25.0%	41.0%	Bolt *et al*
500	10.6%	32.6%	Huth *et al*
750	18.0%	34.0%	Elsom *et al*
16,715*	13.8%*	37.1%*	

*Including nine additional studies not detailed in the table.

TABLE II.
FREQUENCY WITH WHICH NEWLY DIAGNOSED ABNORMALITIES ARE ASYMPTOMATIC

Investigators	Number of Individuals Studied	% of Abnormalities Asymptomatic
Huth *et al*	500	67%
Elsom *et al*	750	69%
Franco	707	55%

From *The Medical Bulletin* (Standard Oil Company (New Jersey), March, 1957. This is the general substance of, and three of the tables are reproduced from, a chapter by DR. NORBERT J. ROBERTS in the book, "The Early Detection and Prevention of Disease," edited by JOHN P. HUBBARD, M.D., copyright 1957 by the McGraw-Hill Book Co., Inc., reproduced by permission of the publisher.

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These individuals in whom significant asymptomatic disease is encountered, are, of course, those benefiting most obviously from periodic examinations. In addition to them, however, approximately equally as many are found to have significant, previously known disease which, in as many as 50% of cases (Elsom), ought to be but is not being medically observed or treated. Those among these patients who are persuaded to seek and obtain indicated medical treatment or observation for such known but neglected conditions obviously also may profit appreciably.

A few in whom are discovered diseases not ordinarily classified as significant — such as epidermophytosis — are assisted because even these conditions can, and not infrequently do, progress to cause some incapacity or disability if not given attention.

Admittedly, a good number of individuals in whom significant new disease is discovered cannot be helped materially. However, the greater likelihood of a favorable eventual outcome when some diseases are discovered in relatively early stages has been well documented. In this respect, the recently reported experiences of the University of Minnesota Hospitals and Minnesota Medical Foundation in their study of asymptomatic malignancies deserve notation. Although admittedly at the time of their report the interval over which some of their patients had been followed was not sufficiently long to be conclusive, 94% of their patients discovered to have asymptomatic rectal or colon carcinomas continued to live at the time of the report, whereas only 37% with symptoms from such carcinomas had survived to the same date. Of their patients with asymptomatic gastric carcinomas 66% had survived as opposed to 20% of those whose gastric carcinomas were symptomatic.

With further pertinence to the question of the value of these examinations, it is clearly apparent that the individual examined and found to need medical observation or treatment must seek and obtain it, or must be persuaded to accept it if it is the patient's personal physician who is doing the health maintenance examinations. A follow-up study by Whalen and Woodward of 100 patients in whom significant new diagnoses had been made during periodic health maintenance examinations performed in Philadelphia revealed that 68% promptly sought and obtained the care or observation indicated; 15% delayed from one to several months but eventually sought and obtained it; 11% promptly sought the care or observation indicated but obtained such only after delay, and 6% could never be persuaded to seek or accept treatment, including one with an evident carcinoma. Some of those who do not seek medical service promptly might never do so if we do not gently remind them — sometimes several times — of the desirability of their doing so. We feel a responsibility to attempt to stimulate or persuade — tactfully and ethically — those to seek attention who ought to.

When health maintenance examinations are repeated on the same individuals after varying intervals, such as yearly, new and significant diagnoses continue to be made, as would be expected, but with somewhat diminished frequency. This too, of course, is influenced by many factors such as the interval between examinations, age, sex, etc. That the "yield" still justifies the performance of the examinations is indicated, however, by experience such at that of Bolt and his group, Elsom and his, and that of the University of Minnesota Hospitals and Minnesota Medical Foundation. The Michigan group reported finding significant new disease at the time of each examination in from 13 to 20% of those examined when the same individuals, though with attrition in their numbers, were examined six times over a period of years at approximately one-year intervals. Elsom et al reported 22% of 150 patients re-examined one to two years after initial examination were found to have previously undiagnosed significant disease. The Minnesota group reported that 45% of 147 carcinomas discovered in 6,754 individuals over the age of 45 were found at the time of re-examination over a 6½-year period, rather than at the time of initial examination. Such yields would seem to justify annual examinations, though the use of a "screening" type of examination in the interval between thorough examinations every second year might be found a practical compromise under certain circumstances, especially in the younger age groups.

The value of the periodic measurement of an individual's health is, of course, enhanced materially if the examination itself is followed up by a revisit — rather than a letter or telephone call — during which the doctor succeeds in communicating his findings and his advice to the patient. That this itself is a major challenge is evidenced by the frequency with which intelligent individuals leave physicians' offices without having understood or without being sufficiently impressed to remember what they were told and advised. Doctors appreciative of the educational potentialities of these revisits use all the skill at their command in explaining their findings and their advice to the patient and being assured that they have answered, to his satisfaction, all of his questions that they can. They make sure, too, that a specific invitation is urged upon the patient to return prior to his next regularly scheduled examination if the development of any symptoms or problems indicates the desirability or potential helpfulness of medical counsel. Such "indicated" visits during the interval between regular examinations are, as would be expected with the presence of symptoms, more likely than the regularly scheduled examinations to reveal the existence of some disease requiring observation or treatment.

Lastly, with respect to the ultimate value of these examinations, we must ask what is the eventual course of those diseases discovered. Franco, in a follow-up study of the diseases found in 707 individuals over a seven-year period, learned that: 20% had been cured completely; 33% were improved; 31% were unchanged; 11% had progressed, 3% actually to the point of requiring retirement due to disability, and 5% had caused death.

Now we might turn to the second of the questions posed by the editors of the *J.A.M.A.*, namely:

IS REASSURANCE *of a patient after a routine check-up that he has no disease valid?*

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Of course, the validity of any reassurance that might be offered could only be relative, and would be dependent upon many of the factors previously mentioned, such as the calibre and thoroughness of the examinations and examiners, etc. No physician with any measurable amount of experience would be foolish enough to believe that he could assure a patient positively that he was in perfect health on the basis of any examination, no matter how thorough. Most of us have suffered, and all of us have heard of, experiences in which individuals died with devastating promptness after being assured of their good health. Nonetheless, it seems apparent that after a thorough examination is well performed and interpreted, that a considerable amount of reassurance can be offered a patient with great statistical likelihood that the reassurance is justified. As indicated previously, we feel it advisable to report the results of health maintenance examinations to individuals in person at the time of a re-visit, rather than by letter. In doing so, we report that, although there are limits in our ability to measure health, the examination has revealed no evidence of disease, if such is the case, or no evidence of disease other than that which is described to the individual. While we might prefer the more positive approach of assuring the individual, for example, of the fine status of his health, we feel that, in view of the present limitations on our skill in measuring health, we are justified in taking the somewhat negative approach of reassuring the individual patient only of the absence of evidence of disease. This, of course, is supplemented by positive and reassuring comments on evident health assets, and by positive health maintenance advice.

IS IT WISE *to place emphasis on disease instead of health in educating the public?*

No, of course it is not. However, it does not seem to us that we are placing emphasis on disease by the performance of health maintenance examinations the purpose of which is to measure the status of the health of individuals in order that any deviation from health can, if possible, be corrected. As indicated above, in counselling patients about the results of their examinations, it is our practice to spend an appreciable percentage of the time talking about their positive health assets and their potential opportunities for improving their health even in the absence of definite disease. It is doubted that anyone would seriously condemn preventive health maintenance services of any kind because by their very nature they focus at least some attention on what one is trying to prevent. Would anyone suggest condemning smallpox vaccination because it focuses attention to some extent on the unpleasant disease it is designed to prevent? Or might we even be persuaded that vaccination focuses more attention on health than disease?

Admittedly, the performance of health maintenance examinations, the discussion of their results, and the giving of counsel as a result of them, even when done skillfully, can occasionally precipitate previously non-existing anxieties, and in some such instances considerably more harm than good may be done. Clearly, most patients will develop a justified amount of anxiety about any deviation from normal which is encountered and revealed to them. Nonetheless, it seems apparent that, with careful attention to the matter, the precipitation of troubling degrees of anxiety need not be a frequent problem. We believe that the positive results of health maintenance examinations far outweigh the occasional negative results of this type.

The last question posed in the editorial of the *J.A.M.A.* is:

WHAT *shall constitute a medical "overhaul" in a person without any complaints?*

The answer would seem to be a medical history, a physical examination, and certain laboratory procedures. Before discussing these in detail, one quite important difference between the thorough medical examination of the supposedly healthy and that of those who are ill merits comment.

Most clinicians, occupied largely with caring for sick people, appreciate the frequency with which a skillfully taken medical history leads to a preliminary impression which is subsequently confirmed by physical, x-ray or laboratory examination. Those of us accustomed to this may at first be surprised by the fact that it is not so often the history as it is the physical, x-ray or laboratory examination that yields the clue that leads to a significant new diagnosis when we are performing a health maintenance examination. This is true even when thorough histories are skillfully obtained from cooperative examinees. This we should expect, however, after observing the high frequency with which those in whom important new disease is discovered are still asymptomatic with reference to that disease at the time of examination. For example, the vast majority of the patients in whom we discover diabetes mellitus during health maintenance examinations are without any symptoms suggestive of the disease, even when their history is reviewed with them in a suggestive and leading fashion after their diabetes has been indisputably demonstrated in the laboratory. Table IV illustrates the frequency with which the physical, x-ray and laboratory examinations, as opposed to the medical history, may provide the initial clue which leads to the eventual making of significant new diagnoses during the course of health maintenance examinations.

The observation that the interview with the patient is of relatively less value in supposedly-healthy than in ill individuals should not, of course, be construed as advocation of less-skillfully-taken histories in the evaluation of the health of ostensibly well people. It is obvious that the discovery of many important disorders depends quite entirely upon the

TABLE III.
SOURCE OF INITIAL INFORMATION LEADING TO THE EVENTUAL DIAGNOSIS OF NEWLY-DISCOVERED DISEASES

	History	Physical Examination	Laboratory Tests
Elsom *et al*	25%	53%	22%
Huth *et al*	6%	78%	16%
McCombs *et al*	12%	39%	49%

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history obtained from the patient. The observation does, however, suggest the reasonableness, *under those circumstances where time does not permit extensive history-taking by the physician*, of using a questionnaire-type of history to be completed by the patient with subsequent elaboration of positive and significant negative points by the physician. Relatively brief and yet quite inclusive modifications of the Cornell Medical Index health questionnaire have been developed and used successfully. As in the Cornell experience, these often lead to the making of a diagnosis the clue to which might in some cases be overlooked even by a competent physician in the taking of a history. Anyone of us can forget occasionally to inquire about a specific symptom. In such a case, this might be the single practically-available clue to the existence of an important, still-largely-asymptomatic disease — such as an early carcinoma of the larynx in a patient who has had only one or two recent, mild episodes of hoarseness which he does not recall, or does not suspect to be of sufficient importance to mention. A questionnaire will never forget to ask about hoarseness, and it takes only a moment or two for the physician to glance over a questionnaire for positive entries. In fact, such questionnaires may well be used advantageously simply as a check on thoroughness, even when a complete history can and will be taken by a physician.

There should be no need to emphasize the importance of a thorough and careful physical examination when seeking the maximum "yield" in health maintenance work. With the relatively lessened help from the patient's history, our dependence upon objective findings increases. Omission of funduscopic examination or of palpation of the pulsations in the lower extremities will compromise any physician's effectiveness, but will have a *relatively* greater adverse effect on the "yield" of health maintenance work than on that of most types. Physicians who "streamline" their physical examination by omitting the consistent performance of certain steps, such as palpation of the thyroid, may rationalize that they still do these things "on indication." But, of course, most all of the steps considered as part of a good physical examination are not only justified but actually "indicated" for consistent use, even in the absence of any clinical "indication" in the specific individual's picture. For example, are we justified in waiting for an "indication" for looking into the rectum of an adult male when we are aware of: (1) the consistency with which asymptomatic adenomas can be found there; (2) the respected opinions that most carcinomas of the rectum originate in these adenomas; and (3) the fact that most any physician can learn to use at least a seven-inch proctoscope safely and effectively without too much inconvenience for the patient, particularly since the advent of the disposable enema setup?

Additional factors are involved, of course, such as the availability of time for the examination, and success in persuading the patient of its desirability. The advisable duration of the interval between one such examination and a repetition of it might be debated, and, for obvious practical reasons, require compromise with what would seem ideal. But, even if relatively few rectal adenomas become carcinomas, it becomes increasingly difficult to defend the performance of proctoscopic examinations only in the presence of "indications" if it is practical for them to be done "routinely."

What laboratory and x-ray examinations are indicated as a basic "routine" when attempting to measure the health of an ostensibly well, asymptomatic individual? Can the widespread, fashionable contempt for a basic "routine" be defended? Here again, of course, "yield" depends upon many things such as age, sex, descent, location, interval since last testing, etc. But there are some examinations which have such a consistently appreciable yield, even amongst asymptomatic groups of all ages, both sexes, any descent and in any location or socio-economic or occupational group, that they merit consideration for use "routinely" in every case not recently so tested. Such tests can be augmented "as indicated" in the broadest sense, that is, by epidemiologic factors as well as by one or more of the patient's symptoms or the physician's observations. For example, from the viewpoint of being "indicated," the "routine" examination of stool specimens for ova and parasites in areas where the incidence of such infestation is high would seem justified in only different degree than the x-ray examination of the chest of a patient complaining of a cough. In each instance, the "yield" in the form of positive findings is sufficiently high to constitute an "indication" for the performance of the examination.

In view of the results experienced when certain tests or examinations are performed in asymptomatic individuals, to contend stubbornly that the "routine" use of such tests is unscientific is itself unscientific. Obviously, however, for its "routine" use to be justified, the "yield" of laboratory and x-ray examinations must outweigh, from the viewpoint of the frequency or importance of positive results, the cost of the testing in terms of (1) the time, energy and patience of those examined, and (2) the money, and the technical or professional time, energy, skill, facilities, equipment and materials involved.

We cannot here debate at length whether or not the performance of a test "routinely" is justified if it results in the finding of one curable cancer per average expenditure, in terms of money alone, of, for example, $10,000, or $50,000, or $100,000. But we can decide what, under the circumstances under which we work, is practical for our own consistent use as a basic minimum "routine" laboratory and x-ray investigation. Some may believe, correctly or otherwise, that, under their circumstances, not even the "routine" testing of a urine specimen for albumen and sugar is practical. For many, only these two tests plus a determination of the hemoglobin level may be found to be practical "routinely." Others, upon an objective reappraisal of the potentialities in their own circumstances and of the "yields" involved, might decide very reasonably that they could do "routinely" a urinalysis of the usual extent, a measurement of the packed red and white cell volume, an x-ray examination of the chest and a test for the presence of occult blood in a stool specimen. Many, of course, would feel it necessary

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to add additional examinations to such a basic "routine" to meet their requirements. The "routine" use of a basic set of examinations, with a continuing awareness of their limitations and with the judicial requesting of additional ones where indicated specifically or in the broadest sense, does, of course, increase effectiveness of health maintenance work.

It is elementary that a physician ought to have or acquire the knowledge necessary for the effective use of whatever tests he chooses. A doctor who believes that a negative guaiac test for occult blood in a stool specimen is any appreciable evidence that his patient does not have a gastrointestinal malignancy might better not use the test until he obtains the knowledge required for proper interpretation of both the positive and negative results of it. Actually, before deciding whether or not to, or how to, test "routinely" for occult blood in the stool, a physician might well ask himself, and do his best to answer, questions such as the following:

1. What tests are available?
2. How do they compare in sensitivity, in the incidence of false positives and false negatives?
3. What level of sensitivity offers the most practical compromise, under the circumstances of my practice and patients, between avoiding the necessity of investigating too many false positives and risking too many false negatives?
4. Which are technically practical for my use?
5. Would it be practical for me to ask patients to abstain from eating meats for a stated interval before obtaining a stool specimen? Would it be practical to try to obtain more than one specimen for testing "routinely"? How would these decisions influence my selection of a test with respect to its sensitivity?
6. Would it be better for me to use a sensitive screening test upon single specimens obtained without preparation of the patient, and then ask only those whose specimens are positive to eat a meat-free diet for several days before submitting additional specimens for testing with a sensitive reagent?
7. Would it be preferable to ask patients to bring in a stool specimen, or can I count on using the small sample of stool usually found on the glove or finger cot, perhaps performing the test myself in the examining room?
8. What will be my interpretation of a negative report?
9. What will be my usual procedure after receiving a positive report?

Of course, no one would suggest that a physician adopting such a "routine" with respect to the testing of specimens of stool for occult blood should hesitate to depart from this "routine" if he found it desirable or more efficient to do so at any time.

Opinions vary widely about the laboratory and x-ray examinations that are practical for "routine" performance when attempting to measure the health of asymptomatic individuals. The convictions or impressions of two dozen physicians with either extensive experience in this type of work or with clinical ability which merits and receives widespread respect were sought and obtained. They revealed a wide disparity of thought and practices. Among impressions gained were the following:

1. Most use a basic "routine" battery of tests which is more extensive on initial examinations and in older individuals than on subsequent examinations or in younger individuals.
2. Urinalysis of the usual extent and chest x-ray examination are almost consistently used by those surveyed, though a few test the urine "routinely" only for the presence of albumen and glucose.
3. Complete blood counts are being done "routinely" by only one-third of those surveyed, the impression being expressed by several that relatively little is sacrificed when only the hemoglobin level is determined and a stained blood smear is scanned. Some feel that maximum "yield" for minimum procedure is obtained by measuring only packed red and white cell volume "routinely."
4. Four out of five do electrocardiograms "routinely," but most do so only on individuals over 35 or 40 years of age.
5. Only one-third "routinely" do serologic testing for syphilis. A similar proportion test stool specimens for occult blood, and the same number have each individual 35-45 years of age or older proctosigmoidoscoped. (Although the latter is referred to here, it is appreciated that this is actually an extension of the physical examination rather than a laboratory procedure.)
6. Few, only 12%, feel that the erythrocyte sedimentation rate is of sufficient value to justify its "routine" measurement, and only a similar number are obtaining "routinely" smears of the uterine cervix for cytologic study, or blood for glucose determinations.

A few of those whose opinions were sought expressed doubt as to the value of the "routine" performance of some examinations which they nonetheless do in every case — such as a complete blood count or a serologic test for syphilis. The apparent discrepancy is explained by their disinclination to assume the risk of "missing" even the infrequent leads that such tests, in their particular experience, give them. Several discontinue the "routine" performance of such tests in examinations subsequent to the initial one of each individual.

Within reasonable limits, it is possible for us to estimate the frequency with which various commonly-used laboratory and x-ray examinations will indicate the probable existence of some abnormality when used consistently in measuring the health of supposedly well individuals. We can obtain some idea of a reasonable range of expectations from Tables IV through VIII even though those individuals with known disease or with suggestive symptoms have not been specifically excluded from most multiphasic screening studies included as data sources, and even though the results of these and other studies quoted vary appreciably with the age and sex distribution of the groups studied, the location and races involved, the test procedures and standards used, the interpretation of results, the proportions of the groups which were asymptomatic, the extent to which those in the groups were "selected," and the proportions previously screened.

Some examinations, as will be appreciated, give much higher "yields" than indicated in the foregoing tables. For example, proctosigmoidoscopic examina-

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TABLE IV.
RESULTS OF "ROUTINE" USE OF CERTAIN LABORATORY EXAMINATIONS

Examination	Individuals Studied		% "Abnormal"
Urine for sugar	423,005	(25)	2.5%
Urine for albumen	45,961	(11)	3.2%
Blood for hemoglobin	241,474	(15)	6.7%
Blood for sugar	507,383	(15)	4.1%
Blood for syphilis	507,671	(13)	5.6%
Stool for occult blood	2,772	(6)	15.7%

(Figures in parentheses after the number of individuals studied indicate the number of different studies included.)

TABLE V.
RESULTS OF "MASS" CHEST X-RAY EXAMINATIONS

18,839,473 Individuals
Reported on in 46 Studies:

2.88 % — had abnormality of some type
0.163 % — had active pulmonary tuberculosis
0.72 % — had abnormal cardiovascular silhouette
0.0109% — had primary pulmonary malignancy

TABLE VI.
RESULTS OF "MASS" ELECTROCARDIOGRAPHIC EXAMINATIONS

No. of Individuals Examined	Percentage with "Abnormal" Tracings	Investigator
3,984	16.7%	Weinerman *et al*
3,500	5.2%	McGee
3,179	6.8%	Holmes *et al*
2,252	18.2%	Phillips
2,000	15.0%	Kline *et al*
362	4.0%	Matthewsen
342	5% in those with normal weight and blood pressure	
	10% in those overweight	Overholt
	19% in those hypertensive	
	33% in those overweight and hypertensive	
15,619	11.91% of total had abnormal tracings by investigators' standards	

TABLE VII.
RESULTS OF PROCTOSIGMOIDOSCOPIC EXAMINATIONS OF ASYMPTOMATIC INDIVIDUALS

Number Examined		% with Carcinoma	% with Benign Polyps or Adenomata	Investigator
4,038	Females 45+	0.2%	4.3%	L'Esperance
3,450	Females	0.3%	3.0%	Ortmayer
3,364	45+	0.39%	17.2%	Enquist *et al*
2,985	Males 45+	0.13%	8.6%	L'Esperance
2,226	45+	0.13%	12.17%	Christianson *et al*
26,186*		0.305%*	8.23%*	

*Including 12 additional studies not detailed in the table.

TABLE VIII.
RESULTS OF CYTOLOGIC STUDY OF CERVICAL SMEARS

Number of Individuals	% Having Asymptomatic Carcinoma	Investigator
30,527	0.37%	Day *et al*
12,116	0.83%	Stern *et al*
11,207	0.71%	Martin *et al*
10,253	0.33%	Nieburgs
138,233*	0.488%*	

*Including 17 additional studies not detailed in the table.

tion more often reveals other positive findings than it does polyps and carcinomas to which the table exclusively refers.

Published studies have also given quite good indications of the potential "yield" of other examinations which are not often or widely used on a "routine" basis. For example, the frequency of significant findings that might be expected in some groups from "routine" x-raying of the stomach and duodenum, or the gallbladder, or from "routine" measurement of intra-ocular pressure, has been determined and reported. Practical difficulties often preclude the performance of less-commonly-used examinations, even when the "yield" is measurable. Certain examinations which can be performed simply are not widely used "routinely" because of their relatively low "yield." Still others, such as blood typing and grouping, are felt sufficiently important to justify routine determination only under certain circumstances, usually related, of course, to the potential usefulness or importance of results in the groups so tested.

Summary and Conclusions

EVIDENCE exists that the periodic measurement of the health of supposedly well individuals often leads to the discovery of significant, previously unrecognized disease, that such is frequently still asymptomatic and that, as would be expected, better results are frequently enjoyed when these diseases receive attention in their early stages. Most patients obtain any medical observation or treatment indicated. The wider advocation and performance of such health maintenance examinations is urged.

Bibliography

THE extensive bibliography is here omitted, but is included in the author's reprints.

[The author wishes to acknowledge gratefully the appreciable technical assistance of Mrs. Ruth Davis, M.S.]

Really?

THE MODERN physician takes pride in exposition. He avoids dogmatic authoritarianism. He feels that his prime responsibility is to teach the patient all that he can comprehend about his illness; exposition, not dictation, is his concern. If the physician has some skill as a teacher, or even merely patience, he will have little difficulty in translating essential technical details for an individual whose attention should be well focused. And this participation of the sick person is not confined to the management of his treatment; it is often very important in the analysis of his case, as well.

—From "The Changing Physician," by DANA M. ATCHLY, *Atlantic Monthly*, August, 1956; in *Industrial Health* (Health League of Canada), November-December, 1957.

Industrial Medical Association

President's Page

THE 1958 National Industrial Health Conference will be held in Atlantic City, April 19-25. This is the Forty-Third Annual Meeting of the Industrial Medical Association; and for the fifth time we meet in Atlantic City. During the seven year interval since our last meeting here, meetings have been held in Cincinnati, Los Angeles, Chicago, Buffalo, Philadelphia, and St. Louis. We continue in the established pattern of meeting with the four other groups with which we have a common interest — American Industrial Hygiene Association, American Conference of Governmental Industrial Hygienists, American Association of Industrial Nurses, and American Association of Industrial Dentists.

SIR William Osler once said: "To best treat a disease, one should have suffered such a disease." Similarly, it can be said that to understand the amount of work entailed in planning, organizing and conducting such a conference, one must necessarily have been actively involved. The joint efforts of many officials and committees over the greater part of two years is essential to utmost success, and certainly such has been the case as a prelude to this event. To single out one who has contributed most would be impossible; and to name all who have contributed much could not be done adequately in the scope of this page.

Conference registration facilities will be available at Chalfonte-Haddon Hall on Sunday, April 20, and at 9:00 A.M. Monday, April 21, at Convention Hall. For the greater part, and for the fourth consecutive year, meetings are scheduled in the local auditorium. A number of innovations will be noted in the IMA program:

A reception for IMA members, wives and guests will be held Monday, April 21, from 5:00 to 8:00 P.M. in the Garden and Vernon Room, Haddon Hall.

In lieu of hospital clinics on Tuesday morning, there will be several concurrent section meetings arranged by IMA Committees, i.e., Medical Care, Surgery of Trauma, Cardiovascular Disease, and Problem Drinking. Other IMA Committees which have arranged comprehensive and informative programs are — Radiation, Dermatology, Small Plant Services, and Standards for Motor Vehicle Driving.

The Scientific and Educational Exhibits will be much more extensive and elaborate than at any previous meeting. Many interesting features will be displayed. The Scientific Exhibits Committee has been unusually active in emphasizing this particular feature of the program.

THE RECENTLY established Women's Auxiliary of the New Jersey Component Society has arranged for entertainment of wives of members of all participating groups. All ladies are invited to participate in the many diversified activities made available through the efforts of the New Jersey Auxiliary.

The Annual Meeting will be held Wednesday, April 23, at 3:30 P.M. In addition to transaction of business, there will be the Fellowship Ceremony, and election of Officers and Directors. The annual banquet will be held the same evening in the Carolina Room of the Chalfonte Hotel. David B. Allman, M.D., President of the American Medical Association, and Governor Meyner of New Jersey, will be guests for this occasion.

On Thursday afternoon, a special session on Certification in Occupational Medicine will be conducted by James Sterner, M.D., and others. This should prove of tangible value to the many who have expressed an interest in this subject.

THIS should be a truly composite program for all physicians interested in the many phases of Industrial Medicine, and we anticipate with pleasure the prospect of once agan assembling in Atlantic City during the fourth week in April.

Jerome W Shilling M.D.

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Industrial Medical Association

THE BOARD of Directors of the INDUSTRIAL MEDICAL ASSOCIATION, as provided in the By-Laws, have nominated one candidate for each of the offices of President-Elect, First Vice President, Second Vice President, Secretary, and Treasurer. The present President-Elect, H. W. LAWRENCE, M.D., will automatically succeed to the office of President at the conclusion of the Annual Meeting in April at Atlantic City. At the Annual Business Meeting, April 23, the following nominees, whose pictures appear on the next page, will be voted upon: D. JOHN LAUER, M.D., for President-Elect; R. E. ECKARDT, M.D., for First Vice President; GRADIE R. ROWNTREE, M.D., for Second Vice President; LEONARD ARLING, M.D., for Secretary; JOHN L. NORRIS, M.D., for Treasurer.

BALLOTS will be distributed at the door at the Annual Meeting, 3:30 P.M., April 23, 1958, Convention Hall, Atlantic City, to those Fellows and Members presenting their 1958 membership cards.

As further provided by the By-Laws, the Nominating Committee has reported eleven candidates for the vacancies on the Board of Directors for the years 1958-1961. Five Directors are to be elected for this term. The pictures of the 11 nominees appear on page 162. These candidates will be named on the prepared ballot; however, further nominations may be made from the floor and may be written on the ballot.

The nomination of only eleven, and the subsequent election of only five Directors, reflects a change in the By-Laws, passed at the 1957 Annual Meeting in St. Louis, which provides for an eventual Board of Directors composed of 15 Directors, five to be elected each year for three-year terms.

All of the men nominated have demonstrated their interest in the INDUSTRIAL MEDICAL ASSOCIATION and their willingness to work to promote the cause of the Association. There is good geographical distribution, and representation from the component groups.

Biographies

HERE are brief biographical notes on each of the nominees for IMA Directorships:

DONALD C. BEWS, Medical Director, The Bell Telephone Company of Canada, Montreal, Quebec; M.D., Queen's University, Kingston, Ontario, 1935; IMA Member, 1949, and Fellow, 1953; IMA District Counselor, 1955-58.

HAROLD BRANDALEONE, Medical Director, Third Avenue Transit System and United Parcel Service, New York City; M.D., N.Y.U. School of Medicine, 1938; IMA Member, 1949, and Fellow, 1954; Chairman, IMA Committee on Standards for Vehicle Driving, 1955-58; President, New York State Society of Industrial Medicine, Inc., 1956-58; Fellow, American College of Physicians.

EDWIN DEJONGH, Medical Director, Pontiac Motor Division, General Motors Corporation, Pontiac, Michigan; M.D., University of Michigan, 1936; IMA Member, 1942, and Fellow, 1943; IMA District Counselor, 1952-53, and Director, 1953-55; Secretary-Treasurer, Michigan I.M.A., 1952-53; Diplomate, American Board of Preventive Medicine in the specialty of Occupational Medicine.

J. S. FELTON, Director of Health Service, University of Oklahoma Medical School, Oklahoma City; M.D., Stanford University, 1935; IMA Member, 1941, and Fellow, 1950; Member, IMA Committee on Education and Training, 1953-57, Chairman, 1957-58; Diplomate, American Board of Preventive Medicine in the specialty of Occupational Medicine.

ALLAN J. FLEMING, Medical Director, E. I. du Pont de Nemours & Company, Wilmington, Delaware; M.D., McGill University, 1932; IMA Member, 1941, and Fellow, 1948; IMA Director, 1947-49; President-elect, I.M.A. of Philadelphia, 1958; Diplomate, American Board of Preventive Medicine in the specialty of Occupational Medicine.

S. CHARLES FRANCO, Associate Medical Director, Consolidated Edison Company of New York, Inc., New York City; M.D., Long Island College of Medicine, Brooklyn, 1931; IMA Member, 1937, and Fellow, 1954; IMA District Counselor, 1954-58; Fellow, American College of Physicians.

H. GLENN GARDINER, Medical Director, Inland Steel Company, East Chicago, Indiana; M.D., University of Oklahoma, 1935; IMA Member, 1941, and Fellow, 1944; IMA Director, 1952-54, and Secretary, 1954-58; President, Central States Society of Industrial Medicine and Surgery, 1952-53; Diplomate, American Board of Preventive Medicine in the specialty of Occupational Medicine.

EMMETT B. LAMB,, Medical Director, P. R. Mallory & Company, Inc., Indianapolis, Indiana, and Physician in Charge, Indianapolis Works, International Harvester Company; M.D., Indiana University, 1931; IMA Member, 1942, and Fellow, 1947; IMA District Counselor, 1952-56, and Director, 1956-58; President, Central States Society of Industrial Medicine and Surgery, 1950; Fellow, American College of Surgeons.

E. PARKER LUONGO, Medical Director, General Petroleum Corporation, Los Angeles, California; M.D., Georgetown University School of Medicine, 1937; IMA Member, 1944, and Fellow, 1951; IMA Director, 1951-53, 1954-56; Diplomate, American Board of Preventive Medicine in the specialty of Occupational Medicine.

CARL A. NAU, Professor and Chairman, Preventive Medicine and Public Health, University of Texas Medical Branch, Galveston; M.D., Rush Medical College, 1933; IMA Member, 1943, and Fellow, 1948; Chairman, IMA Committee on Toxicology, 1956-58; Diplomate, American Board of Preventive Medicine in the specialty of Occupational Medicine.

WILLIAM G. THUSS, SR., Thuss Clinic, Birmingham, Alabama; M.D., Vanderbilt University, 1920, Founders Medalist; IMA Member, 1938, Fellow, 1941; F.I.C.S.; Medical Director, Employers Insurance Company; Associate Medical Director, State Farm Insurance Companies; Zone Surgeon, various

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Industrial Medical Association

H. W. Lawrence, M.D.
Proctor & Gamble
To Become IMA President

D. John Lauer, M.D.
Jones & Laughlin Steel Company
Nominee for IMA President-Elect

R. E. Eckardt, M.D.
Esso Research and Engineering Company
Nominee for IMA First Vice President

Gradie R. Rowntree, M.D.
Fawcett-Dearing Printing Co.
Nominee for Second Vice President

Leonard Arling, M.D.
Northwest Industrial Clinic
Nominee for IMA Secretary

John L. Norris, M.D.
Eastman Kodak Company
Nominee for Treasurer

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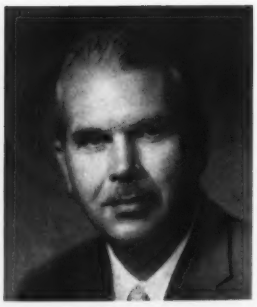
Industrial Medical Association

Nominees for the Board of Directors, 1958-61 (Five to be elected)



Donald C. Bews, M.D.

Harold Brandaleone, M.D.

Edwin DeJongh, M.D.

J. S. Felton, M.D.

Allan J. Fleming, M.D.

S. Charles Franco, M.D.

H. Glenn Gardiner, M.D.

Emmett B. Lamb, M.D.

E. Parker Luongo, M.D.

Carl A. Nau, M.D.

William G. Thuss, Sr., M.D.

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casualty insurance companies; designated physician for Federal employees, etc.

Proposed Changes in By-Laws

THE BY-LAWS Committee of the INDUSTRIAL MEDICAL ASSOCIATION, after due consideration and thought, recommends the following changes to the By-Laws which will be placed before the membership for vote at the next Annual Meeting April 23, 1958, in Atlantic City.

Membership

ARTICLE III, Section 2 (e) — Fellowship, reads: "The Active Members recommended for Fellowship shall appear for examination at a time and place specified by the Board of Examiners in order that proper recommendations may be made to the Board of Directors at a regularly scheduled meeting."

Change to: "The Active Members recommended for Fellowship *may be required* to appear for examination at a time and place specified by the Board of Examiners in order that proper recommendations may be made to the Board of Directors.

ARTICLE III, Section 3 — Active Membership, reads: "Active Members shall be doctors of medicine who are members of their local County Medical Societies and/or active members or member Fellows of the American Medical Association; or, where the applicant resides in a foreign country, of some corresponding association or society, and who shall have had at least a total of three (3) years' experience in the practice of medicine or surgery, in at least two (2) of which he has been actively engaged in the practice of Industrial Medicine or Surgery, or in the investigation of Industrial Medical problems."

Change to: "Active Members shall be doctors of medicine who are members of their local County Medical Societies and/or active members or member Fellows of the American Medical Association; or, where the applicant resides in a foreign country, of some corresponding association or society, and who have an interest in Industrial Medicine."

ARTICLE III, Section 4 (a) and (b) — Associate Membership, reads: "Associate Members shall be doctors of medicine who have the personal and professional qualifications for Active Membership but whose length of experience in the practice of medicine and surgery, or in the field of Industrial Medicine or Surgery, is not sufficient for Active Membership. It may also include specialists in other branches of medicine who have an interest in Industrial Medicine or Surgery but are not actively engaged in the specialty. Doctors of medicine taking post-graduate courses in Industrial Health are eligible for Associate Membership in this Association immediately following their internship. The requirement for Associate Membership of being a member of the county medical society and/or of the American Medical Association may be waived for the duration of their training program."

Change to: "Associate Members shall be doctors of medicine taking post-graduate work in Industrial Medicine, or interns and residents. The requirement of being a member of their local county medical society and/ or of the American Medical Association may be waived for this classification of membership during their training program. Upon completion of their training they will automatically become Active Members provided the above requirements as to membership in their local county medical society and/or the American Medical Association are met."

Election of Officers and Directors

ARTICLE VIII, Section 1 reads "Immediately following the annual business meeting of the Members, the President shall appoint a Nominating Committee consisting of three (3) Fellows from the Membership at large and three (3) Presidents of Component Societies. The Nominating Committee shall nominate not less than two (2) Fellows for each vacancy on the Board of Directors — five (5) of whom shall be for a term of three (3) years, and shall also make nominations for any vacancies for unexpired terms which may need to be filled."

Change to: "Within sixty (60) days following the annual business meeting of the Members, the President shall appoint a Nominating Committee consisting of three (3) Fellows from the Membership at large and three (3) Presidents of Component Societies. The Nominating Committee shall nominate not less than two (2) Fellows for each vacancy on the Board of Directors — five (5) of whom shall be for a term of three (3) years, and shall also make nominations for any vacancies for unexpired terms which may need to be filled."

THE BY-LAWS Committee also recommends that after action has been taken on these changes the By-Laws be reprinted to contain all changes since their revision in 1951 and that each member of the association be furnished with a copy. It is also hoped that the By-Laws of all component societies will be corrected so as not to be in conflict with those of the parent organization.

—By-Laws Committee
ARTHUR K. PETERSON, M.D., Chairman
KOSME F. KAPOV, M.D.
EMMETT B. LAMB, M.D.
GEORGE WILKINS, M.D.

AMA Congress

SOME 250 representatives of industrial medicine assembled in Milwaukee, January 27-29, 1958, for the Eighteenth Annual Congress on Industrial Health, sponsored by the Council on Industrial Health of the American Medical Association. At the scientific level, this conference was devoted to the following sessions: Public and Professional Relations in Occupational Health — KIEFFER DAVIS, M.D., Chairman; Disability Evaluation — O. A. SANDER, M.D., Chairman; Occupational Dermatoses — HARRY R. FOERSTER, M.D., Chairman; Back Injuries — HENRY H. KESSLER, M.D., Chairman.

Foremostly, this Congress, and notably its sponsoring Council, functions with concern for policy viewing, policy promotion and policy making. Within this area of activity, the Congress was addressed

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by GUNNAR GUNDERSEN, M.D., President-Elect, American Medical Association, of La Crosse.

During this Congress, GENERAL MELVIN MAAS presented, as a feature of the Annual Banquet, the President of the United States' Award to LENOX D. BAKER, M.D., of Duke University, Durham, North Carolina, for his outstanding contribution to the employment of the nation's physically handicapped men and women. DR. BAKER was selected for this honor by The President's Committee on Employment of the Physically Handicapped, of which General Maas is Chairman.

WILLIAM P. SHEPARD, M.D., of New York, is the Chairman of the Council on Industrial Health. Other members of the Council are ROBERT A. KEHOE, M.D., V. C. BAIRD, M.D., JOHN N. GALLIVAN, M.D., RUTHERFORD T. JOHNSTONE, M.D., E. S. JONES, M.D., LEMUEL C. McGEE, M.D., M. N. NEWQUIST, M.D., PAUL S. RICHARDS, M.D., O. A. SANDER, M.D., CHARLES F. SHOOK, M.D., JAMES H. STERNER, M.D., and B. DIXON HOLLAND, M.D.

The Railway Surgeons

AMERICAN ASSOCIATION OF RAILWAY SURGEONS will hold its Seventieth Annual Meeting, April 17-19, 1958, at the Drake Hotel, Chicago. The program is as follows:

Thursday Morning, April 17

"MICROBIAL Food Poisoning As Related to Food Service"—G. M. DACK, M.D., Professor of Microbiology and Director of Food Research Institute, University of Chicago.

"The Differential Diagnosis of Chest Pain"—WILLIAM J. HAND, M.D., Chicago.

"The Dizzy Patient"—M. M. HIPSKIND, Chicago.

"Interesting Aspects of the Aging Process"—G. E. BURCH, M.D., New Orleans.

Thursday Afternoon, April 17

PANEL discussion on "Anticoagulant Therapy" by members of the faculty of the University of Illinois and the staff of Presbyterian-St. Luke's Hospital, Chicago—Moderator: JOHN H. OLWIN, M.D., Clinical Associate Professor of Surgery, Associate Attending Surgeon; Cardiologist: OGLESBY PAUL, M.D., Clinical Associate Professor of Medicine, Associate Attending Physician, Head of Section on Cardiology; Internist: NORMAN B. ROBERG, M.D., Associate Professor of Medicine, Associate Attending Physician; Surgeon: WILLIAM S. DYE, M.D., Clinical Instructor in Surgery, Assistant Attending Surgeon; Research Associate: J. L. KOPPEL, Ph.D., Department of Surgery.

"Anorectal Abscess and Fistula"—CHARLES E. POPE, M.D., Evanston, Illinois.

"The Railway Surgeon and the Eye"—GLENWAY NETHERCUT, M.D., Chief Ophthalmologist, Illinois Central Hospital, Chicago.

Friday Morning, April 18

"THE Management of Cancer of the Prostate and Bladder"—GERSHOM J. THOMPSON, M.D., Rochester, Minnesota.

"The Diagnosis of Cancerous Tissue"—EDWIN HIRSCH, M.D., Chicago.

"Carcinoma of the Stomach"—ALTON OCHSNER, M.D., New Orleans.

"The Newer Developments in the Chemotherapeutic Attacks on Malignant Diseases"—ROBERT J. ROHN, M.D., Indianapolis.

After the noon intermission, the Annual Business Meeting will be held for Association members.

Friday Afternoon, April 18

SYMPOSIUM on "Multiple Injuries"—Moderator: RAYMOND HOUSEHOLDER, M.D., Chicago; Orthopedic Surgeon: PHIL DAVIS, M.D., Chicago; General Surgeon: JAMES F. DEPREE, M.D., Seattle; Thoracic Surgeon: THEODORE R. HUDSON, M.D., Chicago; Neurosurgeon: NICHOLAS WETZEL, M.D., Chicago; Urologist: J. KENNETH SOKOL, M.D., Chicago.

"Arthroplasty of the Hip, Indications and Results"—CARROLL B. LARSON, M.D., Iowa City.

"Diagnosis and Treatment of Diseases of the Nails, with Special Reference to the New Method of Treating Ringworm"—CLEVELAND J. WHITE, M.D., Chicago.

Friday Evening, April 18

FELLOWSHIP hour will be followed by the annual dinner. Entertainment for the evening will include an all-color film lecture on "The Union of South Africa," presented by CLIFFORD J. KAMEN.

Saturday Morning, April 19

"MODERN Treatment of Diabetes"—ARTHUR R. COLWELL, JR., M.D., Wilmette, Illinois.

"Current Concepts in Geriatrics"—WILLIAM B. KOUNTZ, M.D., St. Louis.

"The Painful Knee and the Negative X-Ray"—THEODORE SIMON, M.D., New Orleans.

"Injuries of the Cervical Spine"—CHARLES HECK, M.D., Chicago.

Letters

Services Available

TO THE EDITOR: Within this letter is another, recently forwarded to the Editor of the *Journal of the Michigan State Medical Society* for publication. In that letter, the Institute of Industrial Health of the University of Michigan makes available to the physicians and industries of the State of Michigan some cooperative services connected with occupational health. While this Institute, being identified with a state university, may have a primary obligation to the physicians and industries of Michigan, by no means is the Institute "state" bound to the exclusion of other portions of the country. The purpose of this present letter is to indicate that the same services, under the same conditions, are available to all physicians and industries regardless of geography. The original letter is now introduced:

"In a just sense the physicians of Michigan are shareholders in the activities of the Institute of Industrial Health, of the University of Michigan. From extensive correspondence, it appears that Michigan's physicians are little aware that they

may utilize various Institute services related to occupational health. Occupational health in many of its aspects requires clinical, laboratory, and field equipment, personnel and experience unavailable to physicians or hospitals other than in a few medical centers of the state. For example, few are equipped or qualified to make dust counts or physical analyses of dusts or to determine the lead content of the blood or the porphyrin level of the urine.

"On these accounts the Director of the Institute desires to place the Institute at the disposal of Michigan's physicians when any of its extensive facilities are needed and desired. However, the Institute has numerous functions apart from such service activities. Foremostly, it participates in professional training of students in occupational health; conducts basic and practical research in industrial toxicology and industrial hygiene; engages in the preparation of scientific reports and manuscripts for publication purposes.

"Through facilities closely identified with the practicing physician, the Institute desires the opportunity to serve the state's physicians through such measures as:

"1. Correspondence will be welcomed on any item related to occupational health. Recent communications exemplify the type of information sometimes sought by physicians: A patient working in a brass foundry presents classical lead poisoning. How can this be when brass consists of copper and zinc only? Two printers suffer from bronchial asthma, but with attacks starting only when at work. What might be the exciting cause? Is there enough free silica in fly ash from power plant stacks to bring about silicosis as a community disease? When dentists operate small x-ray units, is radiant energy damage likely? A patient working in a factory has a dermatitis of the hands. When he is on vacation it persists. Is it industrial? No charges against the physician are involved in such correspondence. Obviously, precise, full information not always exists.

"2. Any physician may refer patients with occupational affections to the University Hospital at Ann Arbor, preferably after due arrangements with the Institute. While such patients enter some one of various specialty services, such as dermatology or internal medicine, the Institute staff acts as the consultant to all specialty departments upon the occupational aspects. Unless the referring physician requests otherwise, the services are limited to diagnosis and recommendations. Adequate reports will be made to the referring physician.

"3. Any physician, or other persons concerned properly may bring to the attention of the Institute any situation in the work environment that is or might be a detriment to the health of workers. Upon proper invitation of the industry, and at its expense, the Institute will visit the work premises, conduct appropriate investigations and make remedial recommendations to the extent requested. Ordinarily reports deriving from such investigative work will be placed in the hands of the responsible management requesting the service, but the desire is to establish and maintain rapport with the physician identified with such industrial plant and promote their best interests with local management.

"4. Strictly limited to available time and staff, the Institute will furnish any physician on request, limited literature, reference items with or without minor abstracts on any specific topic in occupational health. It is impractical to agree to supply elaborate and complete compilation on such major subjects as 'Silicosis' or 'Solvents' but precise items as 'Fiber Glass' or 'Epoxy Resins' lend themselves as examples of the enterprise contemplated. No costs will be made for minor and current listings, but requests for more elaborate library services may involve nominal charges.

"5. Research studies on occupational diseases and delineation of the toxic properties of new materials are well developed functions of the Institute. Physicians and others concerned with these health problems are invited to present such problems to the Institute. To the fullest extent of our facilities we will happily cooperate in developing appropriate research studies seeking to answer these troublesome problems."

This is an invitation to all physicians to make use of the Institute of Industrial Health at the University of Michigan in Ann Arbor.

—SEWARD E. MILLER, M.D., Director.

Books

New Field

ATOMIC ENERGY IN MEDICINE: K. E. HALNAN. Philosophical Library, New York, 1957, pp. 157, $6.00.

This book has been written for readers not necessarily having much knowledge of either physics or medicine, and it is hoped that it may be found widely useful as an introduction to an interesting new field of medicine.

No book of this size could describe all uses of atomic energy in medicine, but it is hoped that the more important ones are included. Some examples — not necessarily the most useful of their class — have been chosen because they are the easiest to make clear, or because they illustrate a particular method.

This objective is pursued through these chapters:

Introduction to Atomic Physics and the Nuclear Reactor.

The Principles of Use of Radioactive Isotopes.

Radioactive Isotopes in Medical Research.

Radiobiology.

Cancer and Radiotherapy.

Radioactive Iodine and the Thyroid Gland.

Radioactive Isotopes and Blood Diseases.

Other new Aids to Diagnosis.

The Medical Use of High Energy Particle Accelerators.

Problems and Hazards of Radiation.

The emphasis of this little book is not upon the damaging properties of radioactive substances, but instead is upon their successful application in diagnosis and therapy. Ultimately the author urges that condemnation of radioactive substances in warfare should give way to condemnation of war itself, since, whatever be the weapons, war is evil.

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The Individual

NON-GROUP ENROLLMENT FOR HEALTH INSURANCE: SOL LEVINE, ODIN W. ANDERSON, GERALD GORDON. Harvard University Press, Cambridge, Massachusetts, 1957, pp. 171, $5.00.

The latest estimates indicate that about 110 million people have some form of health insurance. About 50 million of these are covered by Blue Cross hospitalization contracts. Naturally, the success of voluntary health insurance coverage cannot be gauged merely by the number of people who have some form of coverage; the level of benefits they enjoy, for example, would be an equally important criterion. But the extent of coverage is a reflection of the vitality of the health insurance movement and the awareness of the American people of the need for protection against the financial hazards of illness.

A soft spot has been found in this generally healthy situation. This is the plight of the individual who fits into no group pattern. Health insurance for these millions who stand alone becomes difficult and overly expensive. This book is concerned with experience and plans for meeting this broad and deep gap. The answer is not at hand, but toward the answer there is much striving.

For Quick Reference

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS: N. IRVING SAX. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, 1957, pp. 1467, $22.50.

Continually the chemists of the world are providing industry with a flow of new and useful substances. Continually the industrial toxicologists and hygienists struggle to keep abreast of the chemists in investigative work as to possible harmful properties of these new chemicals. Regrettably the chemists have won that race, since the others without any dallying still are far behind. Yet there are victories. This book as its major content lists some 8,500 substances that have been subjected to some appraisal as to damaging actions. That information in highly condensed form is presented, along with physical and chemical properties, flammability, exposibility, shipping regulations, etc.

The chief author and his five associates have provided in this book eight lesser sections, in which the lengthy presentation of shipping requirements is outstanding and elaborate: Toxicology, Ventilation Control, Personnel Protection and Personal Hygiene, Atmospheric Pollution, Radiation Hazards, Reactor Safeguards, Allergic Disease in Industry, and Shipping Regulations.

This is not a textbook, but a book for quick reference. It is the book first to be reached for when the safety engineer or industrial hygienist still is on the telephone informing some inquirer about a new and little suspected chemical. Useful to the amateurs in the field, it will prove as did its first edition, more useful to the casehardened professionals. These knowing ones may point accusing fingers toward some misleading statements, some near-inaccuracies (as in the presentation of portland cement), some omissions of information inescapably requisite, as in the tables of the diagnostic significance of blood and urine laboratory disclosures. There the tables of normal contents are superb and superior to the other tables devoted to the abnormal. These shortcomings are the product of overdedication to conciseness. This elaborate compilation stands as the doorway to industrial hygiene and toxicology, but the real cathedral of full exposition lies beyond this excellent portal.

Back to Work

CARDIOVASCULAR REHABILITATION: Edited by PAUL D. WHITE, HOWARD A. RUSK, BRYAN WILLIAMS, and PHILIP R. LEE. McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, pp. 155, $6.50.

Written in an interesting discussion style, this is the recorded report of a conference held at the New York University-Bellevue Medical Center under the sponsorship of the Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, and supported by a grant from the National Heart Institute, National Institutes of Health, Public Health Service.

The book presents the major problems facing the practicing physician in the management and rehabilitation of his cardiovascular patients. From the viewpoints of the participants' experiences, the text considers the areas of recent and future research in or related to cardiovascular rehabilitation. The editors have provided an analysis of the emotions of persons with cardiovascular disease; the types of work the cardiovascular patient can perform; the role of the physician, the public, and health agencies in rehabilitation; and the teaching of cardiovascular rehabilitation.

Lengthy discussion centers about the following topics:

Emotions and the Person with Cardiovascular Disease.

Work and the Person with Cardiovascular Disease.

The Practice of Cardiovascular Rehabilitation.

The Teaching of Cardiovascular Rehabilitation.

Research in Cardiovascular Rehabilitation.

This work fails to provide any summarizing consensus. One conclusion that appears tenable is that all too many cardiacs are allowed to become miserable and misery-causing invalids, when, rightly and far more happily, they should be at work doing a day's stint of activity, without too many restrictions, and in a measure competing as peers with those about them.

Smog, et al

AIR POLLUTION BIBLIOGRAPHY, Volume 1: J. R. GIBSON, WAVE E. CULVER, and MARY E. KURZ. Public Health Service, U. S. Department of Health, Education, and Welfare, Washington, D.C., July, 1957, pp. 150.

This paper covered brochure represents a compilation of the chief published material on air pollution from 1952 into 1957. Every citation is accompanied by a brief abstract. The greater number of items derive from publications in this country. Other volumes in this series will be devoted to earlier publications, and to prospective publications. Excellent indices as to author, topic, and geographic region facilitate the location of any wanted item.

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Sporotrichosis as an Occupational Disease

ON OCCASION many diseases, little regarded as occupational as to origin, become occupational, and beyond equivocation. Scurvy as it might arise among a remote band of uranium prospectors, diphtheria in a hospital nurse, and heat cataracts in a tin smelter, serve as suitable examples of the peculiar and unexpected.

Sporotrichosis, a fungal affection, has gained little standing as an occupational disorder. Yet in South Africa about 1943 an epidemic occurred of such proportions as to constitute one of the dramatic episodes in the lore of industrial medicine. The major incident (along with some minor ones) led to some 2825 human cases in gold miners. This inspired the publication, "Sporotrichosis Infection on Mines of the Witwatersrand," published by The Transvaal Chamber of Mines, Johannesburg, 1947. Some of the drama of the situation is reflected in the book's introduction:

"Sporotrichosis had occurred sporadically on a number of mines of the Witwatersrand but had died out without creating any special problem and without providing any real clue as to how it had occurred. The epidemic outbreak amongst underground workers at Venterspost Gold Mining Company, Limited, on a scale unprecedented anywhere in the history of the disease, provided not only hundreds of cases for the study of the mycosis, but also afforded a unique opportunity for intensive investigation into the epidemiology of the disease and the biology of the organism.

"The later outbreak at the Consolidated Main Reef Mines and Estates, Limited, and the discovery of cases at other mines indicated the possibility that the disease might be spreading widely through the mines. It can well be imagined how gravely the economic well-being of the gold mining industry, and indeed of the whole country, was threatened. Not only might the production of gold have been seriously hampered by the incapacitation of thousands of workers, but the fear of contracting the disease might have induced employees to refuse to work underground.

"To combat the menace, the Transvaal Chamber of Mines appointed a Coordinating Committee of Investigation on Sporotrichosis, consisting of representatives from the Transvaal Mine Medical Officers' Association, the Timber Research Laboratory of the Chamber of Mines, the South African Institute for Medical Research, and the Rand Mutual Assurance Company, Limited. The Committee's function was to plan the division of the necessary research work and to set up the organization for the prompt detection of all possible cases. The happy result of the research work is evident in the papers of the symposium whose authors worked in the closest cooperation with each other, and the disease is now well under control. Indeed, it has almost entirely disappeared from the mines."

The epidemiologic investigation as carried out by workers of the Transvaal Chamber of Mines Timber Research Laboratory provides a remarkable instance of a well-pursued inquiry into almost etiologic morass. That section of the published symposium is entitled "Timber as a Source of Sporotrichosis Infection," by Rebecca Brown, Dora Weintroub, and Muriel W. Simpson.

The entire record deserves reading as not-too-technical, adventurous, medical reporting, but here only a few isolated passages may be included:

"The localization of the disease to a single

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shaft (No. 1) at Venterspost, narrowed the field of search for possible sources of infection. In spite of this advantage — for workers in other countries had reported great difficulty in finding pathogenic Sporotricha outside the human body — the problem of finding the fungus in underground workings was literally like looking for a needle in a haystack.

"Timber seemed the most suitable medium for the saprophytic growth of the fungus, although Du Toit had stated that he found it grew well also on mine mud and water. As these materials were present in unlimited quantities in the mine, the task of examining all the timber, mud and water, even in an area where it was suspected miners were contracting the disease, appeared a formidable one, particularly with the inadequate lighting facilities that were available. On the other hand, the extraordinarily high number of cases from even a single level suggested that the fungus must be present in abundance, either distributed over the whole area or localized to certain localities in which miners could be infected. The methods used by previous investigators, and at first by us, were purely empirical. Wherever a mould growth was observed which possibly resembled the fungus, samples were collected and the fungi subsequently grown on agar plates in the laboratory. The cultures were then examined microscopically for the presence of the pathogenic organism. This involved considerable expenditure of time and labour, for hundreds of samples were examined in this way with only one positive result, when in March, 1942, a fungus indistinguishable from the organism isolated from lesions was eventually cultured from a sliver of timber by one of us.

"Although the pathogenic fungus had been isolated from a suspected source — timber — the isolation was entirely fortuitous and was no guarantee that it had been made from an established growth. Just as a spore had been caught from the air, so was it possible that the isolation from timber had been made from a single spore deposited there by air currents."

After many explorations in the mines and in the laboratory there came the final unfolding:

"The most suitable medium for the fungus underground appears to be sound, untreated timber.

"It has been found in situ over 60 times.

"If it is present in a locality, the fungus is one of the organisms which appear early in the succession of fungi occurring on timber underground.

"The pathogen appears to be destroyed by most wood-attacking fungi occurring commonly in the mines, during the progressive stages of their growth and destruction of wood.

"The fungus was not found on timber treated with 'Yard Mixture.'"

Then to the happy ending. The offending and threatening sporotrichium resided on mine timbers, but would not live on suitably chemically treated timbers. So all the timbers were treated and the disease disappeared, not magically, but through intelligent industrial hygienic control.

Empire Builders

AT THE Eighteenth Annual Congress on Industrial Health at Milwaukee in January, Gunnar Gundersen, M.D., President-Elect of the American Medical Association, told his audience that there is some current pressure to have industrial health personnel treat non-occupational conditions with the apparent goal of creating a full-time medical care department within industry, attending all illnesses and injuries, no matter how they are incurred. If this were to happen, the result would be a medical care system subsidized and controlled by industry. "Empire builders" was the label given certain industrial physicians who favor the idea of an industry-sponsored, full medical care center, run by the industrial Medical Director.

Although unmentioned, Dr. Gundersen is aware that in the struggles between management and labor, the industrial physician, without being a participant and often wholly unconsulted, is sometimes made the unwilling victim of undesirable medical arrangements. The provision of a salutary work environment is the exclusive obligation of management. Yet, labor in its demands of management in relation to medical activities sometimes seeks services far remote to proper industrial medical programs, and insists upon invasion into medical pursuits rightfully to be provided by the general medical profession.

Labor has little knowledge of, and possibly even less concern for, the carefully defined ethical relations between the industrial physician and the general physician. Management is scarcely better informed or disposed to be adamant in refusal to prostitute a high order of industrial medicine.

In likelihood, labor will continue its demands for increasing medical benefits for workers apart from work affronts, for workers' families including all living generations. Without consideration of the merits of any labor demands for health benefits or the needs of the public for better health measures, the avenue of approach does not lie through the portals of good industrial medicine. Should labor and management jointly or severally seek the rape of good industrial medicine through foolish and wrecking manipulations, then industrial medicine itself must preserve its soundness by unremitting organized refusal to depart from those well conceived demarcations of its proper functions and limitations.